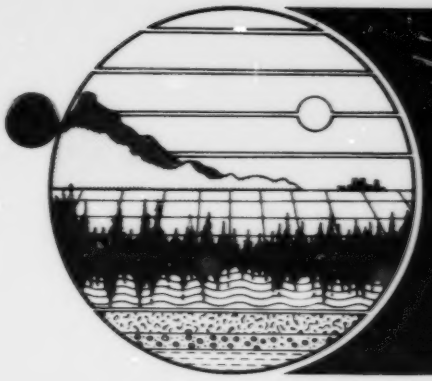

LANDS DIRECTORATE

DIRECTION GÉNÉRALE DES TERRES

CONSERVATION AND PROTECTION

CONSERVATION ET PROTECTION

FEDERAL PROGRAMS WITH THE POTENTIAL TO SIGNIFICANTLY AFFECT CANADA'S LAND RESOURCE

Produced for

The Interdepartmental Committee on Land

Environment Canada Environnement Canada

Canada

87-04931/

FEDERAL PROGRAMS WITH THE POTENTIAL TO SIGNIFICANTLY AFFECT CANADA'S LAND RESOURCE

A report of the Land-Use Policy and Research Branch program which analyses the impact of federal activities on the use and maintenance of Canada's land resource.

Produced for the Interdepartmental Committee on Land.

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and

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1986

Lands Directorate
Environment Canada
Ottawa

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PREFACE

The purpose of this report is to identify and describe the federal programs with the most potential to significantly affect Canada's land resource. This report is prepared by the Land Use Policy and Research Branch of Environment Canada for the use of the Interdepartmental Committee on Land to assist in the implementation of the Federal Policy on Land Use (FPLU). It outlines the functions and overviews the possible land-resource effects of approximately 100 federal programs. These "Top 100" appear to have the greatest influence on the use, management and capability of Canada's land resource, or have the greatest potential to effect the implementation of the Policy.

Many federal government programs affect the nation's land. In recognition of this, the Federal Cabinet approved the FPLU in November, 1980 (Canada, Government of, 1981). Its goal is to ensure that federal policies and programs, and the management of federal lands contribute to the wise use of Canada's land resource. The FPLU provides a series of policy statements and guidelines which should be applied in the planning and administration of all Federal Government programs with respect to land use. Implementation of the Policy is coordinated by the Interdepartmental Committee on Land.

It is intended that this report will increase awareness of the range of federal programs that impact land and of the types of land impacts caused. The report is to be used as a starting point for the implementation of the policy statements and guidelines in the Federal Policy on Land Use by individual federal program managers with the support of the Interdepartmental Committee on Land.

L.C. Munn
Director, Land Use Policy and Research Branch
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RÉSUMÉ

Le présent rapport identifie et décrit les quelque cent programmes du gouvernement fédéral démontrant le plus grand potentiel d'influer d'une manière significative sur les terres du Canada. Les grands traits de chaque programme sont brièvement exposés et leur influence potentielle sur les terres est passée en revue. Ces programmes ont été choisis dans la mesure où il est très probable qu'ils aient une influence notable sur l'utilisation, la gestion ou la productivité des terres du pays, ou sur la mise en pratique de la Politique fédérale sur l'utilisation des terres (PFUT). Ils ont été identifiés d'après huit critères, dont (1) l'importance des questions relatives aux terres, (2) la mesure de leur influence sur les terres et (3) le potentiel d'une application de la PFUT.

La description de chaque programme comprend un aperçu du but et des activités mises en place par le programme suivi d'une revue des impacts potentiels du programme sur les terres, s'attardant tant au type d'impacts qu'à leur diversité. Il est apparu nécessaire dans certains cas de formuler des recommendations de façon à mitiger ou éliminer les effets négatifs sur la ressource terrestre et mettre en pratique la Politique fédérale sur l'utilisation des terres. L'importance du programme en termes fiscaux est donnée par la suite.

Le rapport entend faire connaître l'éventail des programmes fédéraux influençant les terres au Canada et la nature des impacts mis en cause. Il constitue un appui et un guide servant à l'application des énoncés de politique et des lignes directrices de la PFUT.

MEMBERSHIP OF THE INTERDEPARTMENTAL COMMITTEE ON LAND

(April, 1986)

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INTRODUCTION

The purpose of this report is to identify and describe the federal programs with the most potential to significantly affect Canada's land resource. This report is prepared for the use of the Interdepartmental Committee on Land to assist in the implementation of the Federal Policy on Land Use. It outlines the functions and overviews the possible land resource effects of approximately 100 federal programs. These "Top 100" appear to have the greatest impact upon the use, management and potential of the nation's land resource, or have the greatest potential to effect the implementation of the Federal Policy on Land Use.

Many federal government programs affect the capability, use or management of Canada's land resource. Some federal activities directly affect the land resource through, for example, the purchase of farmland, the management of a national park, or the construction of an airport. Other programs influence the nation's land in a significant but less direct way, through activities such as regulation, research, regional development incentives, tariffs and taxation or financial assistance to an economic sector.

In recognition of this, the Cabinet approved the Federal Policy on Land Use in November, 1980 (Canada, Government of, 1981). The goal of this policy is to ensure that federal policies and programs, and the management of federal lands contribute to the wise use of Canada's land resource. Such concerns as the preservation of high quality agricultural land, the maintenance of public access to recreation lands, the sound management of land used to produce renewable resources and the encouragement of the wise use of hazard-prone lands are included in the Policy. It provides a series of policy statements and guidelines which should be applied in the planning and administration of all federal government programs as they affect the land resource.

To ensure the application of the Policy, the government established an Interdepartmental Committee on Land (ICL). While each federal department is responsible for adapting its programs and policies to the guidelines, the ICL co-ordinates implementation of the Policy. One of the steps in this implementation process is the identification and description of federal programs with the greatest potential to significantly affect the land resource.

Programs are identified at a relatively generalized level in each department in order to indicate the variety and scope of federal departmental programs that can affect land. For detailed monitoring of land effects and the conformance of programs with the Federal Policy on Land Use, individual departments may have to focus on sub-programs or particular activities of the programs listed in this report. Specific operational guidelines or review processes may be required in some cases.

Of the many federal programs, policies and activities which have some impact on the nation's land resource, about 100 federal programs have been selected as "most significant". This

selection was in part based on general descriptions of programs that are available in sources, such as the blue book of Main Estimates (Canada, Treasury Board, 1984, 1985) and annual reports of federal departments. Feedback in the form of written reviews from ICL members and federal program managers was also a key part of the process. The informed judgement of land-resource research officers was also utilized. They applied the following selection criteria to each program, with reference to ongoing impact and regional impact research on land use:

(1) Currency: operating now.
(2) Clarity, importance of effect.
(3) Direction of effect: positive or negative.
(4) Importance of land issue affected.
(5) Magnitude of effect (and of program).
(6) Level of aggregation for program.
(7) Decision-making authority.
(8) Potential for implementation of the Policy.

Each of these selection criteria are discussed in some detail below. In effect, the list of the "Top 100" programs includes those which are identified as potentially affecting the land resource in a significant way.

The report is organized into two parts. Part One provides a listing of the programs identified as having the potential to impact the land resource. The 99 programs selected are grouped by department with the departments listed alphabetically. Related agencies and crown corporations included are listed according to the departmental minister through whom they report to Parliament. The order of the listing does not imply any ranking of the programs within the "Top 100".

Part Two provides a one to three page overview for each program which includes a brief description of its purpose and activities and an outline of the type and range of potential land impacts of the program. It is essential that it be understood that the potential land impacts listed for each program are only hypotheses. No definitive conclusions have been reached, based on detailed research. Further research and analysis will most likely be required to determine definitive impacts and how to implement fully and effectively the provisions of the Federal Policy on Land Use for a particular program. For most programs, a final paragraph (section) provides recommendations to be considered vis-à-vis mitigating or eliminating negative land impacts, as well as opportunities for positive influences. These include, where appropriate, the incorporation of the guidelines of the Federal Policy on Land Use into program planning, review and implementation. Finally, for many programs, the report seeks to provide a rough indication of the magnitude of the program, including data on financial resources or information on land owned and managed by the program.

The descriptions and magnitude of the programs described were summarized from information

available in the Treasury Board blue book of Main Estimates (Part II) and departmental estimates (Part III). Other collections of federal program descriptions, departmental annual reports and departmental program descriptions were also used. The complete set of references employed is listed in the "Bibliography." In most cases, departmental personnel were contacted to clarify or update the written documentation. The names of these people are provided in the "List of Contacts" in Appendix D. A major reference used in producing the discussion of potential land impacts for each program was the publication, The Identification of Impacts of Federal Programs on Land Use: A Manual for Program Managers, produced under the direction of the Interdepartmental Committee on Land (Environment Canada, 1982).

Each program overview was reviewed by the ICL member of the particular department or his delegate, often the manager responsible for the program, during the summer and fall of 1985. The reviewers' comments were considered and served as the basis of revisions to the program overviews. Where differences of opinion existed regarding the land impacts of a program, the department's position is incorporated into the program overview. In such cases, it is noted that there is a range of views about the land impacts generated by the programs, which can only be resolved by further study (e.g., Canada Wheat Board -- program # CW.1). Reviewers had an opportunity to comment on the revised program overviews during March-April, 1986. Final changes were undertaken at that time. The names of the people who reviewed the report are provided in the "List of Reviewers" in Appendix E.

In general, program descriptions may be considered current to March, 1986 except as indicated by footnotes to particular programs. However, Federal Government programs are continually evolving to satisfy changing public needs. As a consequence, the program descriptions provided in this report will become out-of-date over time. Nevertheless, the report will continue to be useful for some time to come as an indication of the type and range of Federal Government activities that can significantly affect Canada's land resource.

It is intended that this report will increase awareness of the range of federal programs that impact on the land resource, and of the types of land impacts caused. The report is to be used as a starting point for the implementation of the policy statements and guidelines in the Federal Policy on Land Use by individual federal program managers with the support and, if appropriate, review of the Interdepartmental Committee on Land.

SELECTION CRITERIA

Federal Programs with the Potential to Significantly Affect Land Use

The following criteria were applied by research officers with a knowledge of land-use impacts. General descriptions of federal programs, annual reports of federal departments and programs and the results of specific regional studies were used to derive and organize the list of federal programs with the greatest potential to significantly affect land use.

(1)	Currency	The program must be currently functioning or under active consideration. Programs for which commitments are no longer being made and which will not be renewed in a similar form (e.g., Veteran's Land Act) are excluded.
(2)	Clarity, Importance of Effect	The potential effects on land use by the program must be traceable from a particular program or set of regulations to specific types of land use change. Relative to other public and private inputs to the land use activity and decision, the program must be a potentially significant factor in the land use change occurring. Programs which have important, but rather indirect effects on land use (e.g. unemployment insurance, most manpower programs) are excluded. The land-use characteristics which may be affected include physical capability of the resource, land tenure, land value, the allocation of land among competing uses and the compatibility of various uses.
(3)	Direction of Effect	Programs with either positive or negative effects on the land resource are eligible for selection. Missed opportunities for a positive effect can be considered.
(4)	Importance of Land Issue Affected	The land-use characteristics or activities affected must be related to important land-use issues or goals (e.g. hazardous wastes, agricultural land preservation, habitat protection, etc.). Although some issues or goals may be more prominent at a particular time, the Federal Policy on Land Use provides the general framework. A national perspective should be maintained. The magnitude and cumulative nature of the effects on land use are significant considerations.
(5)	Magnitude of Effect (and of program)	The geographical extent, the timespan, and the cumulative nature of the land-use effects are indicators of magnitude. The magnitude of the program itself ($, person years, land owned and managed) must also be considered. Magnitude must be considered in conjunction with importance.
(6)	Level of Aggregation	Programs must be identified at a level for which land-use effects can be realistically analysed and the guidelines of the Federal Policy on Land Use can be realistically applied. This will usually be at a middle level in an organization. This avoids analysis of individual projects as well as review of a full department as one program.
(7)	Decision-Making	The organization with most authority and discretionary power in developing and in making changes in a program should be chosen for analysis. An organization or unit solely responsible for the routine application of a regulation or directive should be excluded (i.e. for taxation policy concerns, Finance programs should be selected rather than Revenue Canada programs concerns; for transportation development projects, Transport rather than Public Works).
(8)	Implementation of Federal Policy on Land Use	Programs may also be chosen because they show good potential to the implement the policy statements the and guidelines of the Federal Policy on Land Use, due to the nature of the program and possible types of land resource effects.

PART ONE

A LISTING OF FEDERAL PROGRAMS WITH THE POTENTIAL TO SIGNIFICANTLY AFFECT CANADA'S LAND RESOURCE: "THE TOP 100"

NOTE: Programs are listed by department in alphabetical order. The numbering implies no priorization or relative importance within departments.

A LISTING OF FEDERAL PROGRAMS

WITH THE POTENTIAL TO SIGNIFICANTLY AFFECT CANADA'S LAND RESOURCE: "THE TOP 100"

AG. AGRICULTURE CANADA

Research Branch

AG.1. Agricultural Research on Natural Resources

AG.2. Agricultural Research on Production Development

Farm Income Services Branch

AG.3. Crop Insurance

AG.4. Agricultural Stabilization Board and Agricultural Products Board

AG.5. Western Grain Stabilization Program

AG.6. Farm Improvement Loans: Loan Guarantees

Regional Development Branch

AG.7. Federal-Provincial Agricultural Development Subsidiary Agreements Under ERDAs

AG.8. Production Development: Crop Production

Prairie Farm Rehabilitation Administration

AG.9. Water Conservation and Development Programs

AG.10. Community Pasture Program

AG.11. Tree Distribution Program

AG.12. Soil Conservation Service

Canadian Forestry Service

AG.13. Research into Improving Forest Productivity

AG.14. Energy from the Forest: Biomass Production

AG.15. Federal-Provincial Forest Resource Development Subsidiary Agreements Under ERDAs

Programs with Potential to Significantly Affect the Land Resource:

Related Agencies that Report Through the Minister of Agriculture

AG.16. Canadian Dairy Commission: National Dairy Program

AG.17. Farm Credit Corporation

AG.18. Livestock Feed Board of Canada: Feed Freight Assistance Program

Programs with Potential to Significantly Affect the Land Resource:

CM. CANADA MORTGAGE AND HOUSING CORPORATION

CM.1. Housing Research, Development, Demonstration and Information

CM.2. Social Housing:
Continuing Cooperative Housing Assistance.
Private and Public Non-Profit Housing Corporations.
Public Housing Assistance.

CM.3. Housing Rehabilitation and Conservation: Residential Rehabilitation Assistance Program

CM.4. Rural and Native Housing Program

CW. CANADIAN WHEAT BOARD

CW.1. Canadian Wheat Board

EI. EMPLOYMENT AND IMMIGRATION

EI.1. Canadian Agricultural Employment Programs:
Federal-Provincial Agricultural Employment Agreements.
Canada Farm Labour Pools.
Foreign Seasonal Agricultural Worker Movements.

Programs with Potential to Significantly Affect the Land Resource:

EM. ENERGY, MINES AND RESOURCES

Energy Program Sector

EM.1. Petroleum Sources: Supply, Demand and Substitution

EM.2. Non-Petroleum Sources: Supply, Demand and Substitution

Mineral Policy Sector

EM.3. Mineral Development: Analyses and Advice

EM.4. Federal-Provincial Mineral Development Subsidiary Agreements Under ERDAs

Earth Sciences Sector

EM.5. Surveys and Mapping

EM.6. Geological Survey

Research and Technology Sector

EM.7. Remote Sensing

Related Agencies that Report Through the Minister of Energy, Mines and Resources (EM.8 to 11):

EM.8. Atomic Energy Control Board

EM.9. Atomic Energy of Canada Limited (includes Canada-Ontario Irradiated Fuel Waste Management Agreement)

National Energy Board

EM.10. Pipelines and Powerlines: Research and Regulation

EM.11. Advice on the Control, Conservation, Marketing, Export and Use of Oil, Gas and Electricity.

Programs with Potential to Significantly Affect the Land Resource:

EN. ENVIRONMENT CANADA

Conservation and Protection

EN.1. Canadian Wildlife Service: Habitat Conservation Program

EN.2. Flood Control and Flood Damage Reduction Programs (Federal-Provincial Agreements)

EN.3. Lands Conservation Program

EN.4. Waste Management

EN.5. Industrial Programs: Control of Threats From Specific Human Activities

EN.6. Priority Environmental Issues: Acid Rain (Integrated Program)

EN.7. Priority Environmental Issues: Toxic Chemicals (Integrated Program)

Parks Canada

EN.8. National Parks

EN.9. National Historic Parks and Sites; Heritage Canals

EN.10. Cooperative Heritage Areas

EN.11. Canadian Heritage Rivers System

Related Agency that Reports Through the Minister of Environment

EN.12. Federal Environmental Assessment Review Office

Programs with Potential to Significantly Affect the Land Resource:

EX. EXTERNAL AFFAIRS

Related Agency that Reports Through the Minister of External Affairs:

EX.1. International Joint Commission

FI. FINANCE

Tax Policy and Legislation Branch

FI.1. Tax Policy and Legislation (Branch)

Federal-Provincial Relations and Social Policy Branch

FI.2. Policy Advice on Social Development, Housing and Land Claims

Economic Programs and Government Finance Branch

FI.3. Policy Advice on Canada's Natural Resources: Energy, Oil and Gas, Minerals, Northern Development, Environment and National Parks

FI.4. Advice on Industrial and Science Policy and Regional Development, Transportation Communications, Forestry, Agriculture and Fisheries

Related Agency that Reports Through the Minister of Finance

FI.5. Tariff Board: Research and Recommendations; Appeals

FS. FISHERIES AND OCEANS

Fisheries Habitat Management and Research (Pacific and Freshwater Fisheries)

FS.1. Freshwater and Marine Habitat

Programs with Potential to Significantly Affect the Land Resource:

IN. INDIAN AFFAIRS AND NORTHERN DEVELOPMENT*

Administration Program

IN.1. Office of Native Claims

Indian and Inuit Affairs Program

IN.2. Lands, Revenues and Trusts (Operations) Branch: Management and Control of Indian Reserves and Other Crown-Owned Land

IN.3. Economic and Employment Development: Assistance in Creating Business, Employment and Socio-Economic Development Opportunities

Northern Affairs Program

Natural Resources and Economic Development Branch

IN.4. Northern Land Use Planning

IN.5. Forest Resources

IN.6. Northern Environment: Assessment and Studies

IN.7. Environmental Studies Revolving Fund -- DIAND

IN.8. Land Management and Water Resources

IN.9. Economic Development Agreements with the Yukon and Northwest Territories

IN.10. Northern Mining Management

IN.11. Northern Infrastructure Development

IN.12. Northern Oil and Gas Management and Major Resource Projects

Constitutional Development and Strategic Planning Branch

IN.13. Northern Oil and Gas Action Program

Related Agency that Reports Through the Ministers of Indian and Northern Affairs and Energy, Mines and Resources

IN.14 Canada Oil and Gas Lands Administration

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* Also known as Indian and Northern Affairs Canada and Department of Indian and Northern Affairs.

Programs with Potential to Significantly Affect the Land Resource:

ND. NATIONAL DEFENCE

Defence Services Program

ND.1. Construction and Acquisiton of Land, Buildings and Works

ND.2. Management of Defence Installations, Bases and Military Ranges

NP. NORTHERN PIPELINE AGENCY

Agency that Reports Through a Named Minister

NP.1. Canada-Alaska Highway Gas Pipeline

PW. PUBLIC WORKS CANADA

PW.1. Accommodation Program

PW.2. Federal Land Development and Management Activity

PW.3. Municipal Grants Program

Related Agency that Reports Through the Minister of Public Works

PW.4. Canada Lands Company (Mirabel) Limited

Programs with Potential to Significantly Affect the Land Resource:

RE. REGIONAL INDUSTRIAL EXPANSION

RE.1. Industrial and Regional Development Program

RE.2. Tourism Program: Tourism Product Development and Tourism Marketing

RE.3. Western Transportation Industrial Development Program

Office of Regional Development

RE.4. Economic and Regional Development Agreements (ERDAs)

Subsidiary Agreements under ERDAs Administered by Regional Industrial Expansion

RE.5. Tourism Development

RE.6. Newfound'and: Pulp and Paper Mill Modernization: 1984-1989

RE.7. Nova Scotia: Strait of Canso Area Development: 1984-1989

RE.8. Saskatchewan: Northern Economic Development: 1984-1989

Related Agency that Reports Through the Minister of Regional Industrial Expansion

RE.9. Cape Breton Development Corporation (DEVCO)

Programs with Potential to Significantly Affect the Land Resource:

SO. SOLICITOR GENERAL

Correctional Services Program

SO.1. Penitentiary Services: Construction, Acquisiton and Management of Land, Buildings and Works

TB. TREASURY BOARD

Administrative Policy, Central Administration of the Public Service

TB.1. Federal Land Management (TBAC/FLM)

Programs with Potential to Significantly Affect the Land Resource:

TR. TRANSPORT CANADA

Canadian Marine Transportation Administration

TR.1. Public Wharves and Harbours

TR.2. Harbour Commissions

Airports Authority Group

TR.3. Airports and Associated Ground Services -- Major Federal Airports Component

Canadian Surface Transportation Administration

TR.4. Highway Transport: policies and programs and federal-provincial agreements related to the construction and improvement of highways, bridges and tunnels

TR.5. Federal-Provincial Transportation Development Subsidiary Agreements under ERDAs

TR.6. Water Transport: policies and programs for the operation of coastal ferry and shipping services

TR.7. Railway Freight Transport and Rail Passenger Transport: policies and programs regarding rail passenger and freight services

Related Agencies that Report Through the Minister of Transport (TR.8 to 13):

TR.8. Grain Transporation Agency

TR.9. Ports Canada: Canada Ports Corporation

TR.10. St. Lawrence Seaway Authority

Canadian Transport Commission

TR.11. Air Transport: regulation of commercial air services and subsidies

TR.12. Railway Transport: regulation of railway operations and subsidies

TR.13. Atlantic Region Freight Assistance

PART TWO

DESCRIPTIONS OF FEDERAL PROGRAMS WITH THE POTENTIAL TO SIGNIFICANTLY AFFECT CANADA'S LAND RESOURCE:

"THE TOP 100"

This part provides a program description, a discussion of potential land impacts and an indication of the magnitude of the program for each federal program listed in Part One.

AGRICULTURE CANADA

Research Branch

AG.1. Agricultural Research on Natural Resources

DESCRIPTION:

The Research on Natural Resources activity provides evaluation, research and extension information with respect to the development and conservation of the natural resources necessary for agricultural production, and the increased efficiency of their utilization. The Land Resource Research Centre and many of the regional research stations (1) perform research on the soil properties limiting productivity, and (2) evaluate the capability of soils for agricultural production through soil survey and classification, land evaluation and agrometeorological research. More effective and efficient methods of utilizing water resources for agricultural production and improved water management techniques are developed. These include irrigation, drainage and desalinization technology. As well, new technology to assist in energy utilization and conservation in the agri-food system is introduced. Environmental quality research for controlling pollution from plant nutrients, residue components and pesticide management is also undertaken. Agrometeorological services are provided.

POTENTIAL LAND IMPACTS:

Research on natural resources can serve as a basis for informed decisions on land use and land management, by individual landowners, government policy makers and planners. As such, it may help to determine the most profitable avenues of agricultural development while contributing knowledge to the maintenance, availability and better utilization of agricultural land.

Improved soil management methods have potential for changing soil characteristics, cropping systems and crop distributions, while advances in technology have the potential to change farming systems (e.g., summerfallow ratio). Research leading to improved soil conservation practices can assist the individual farmer in maintaining soil capability, and thus improve its productivity in order to meet current and future agricultural and food production needs. Agrometeorological services provide the necessary data to help in farm management and agricultural development.

Improved irrigation and water management can extend the area of land cropped. A better understanding of the capability of Canadian soils for agricultural production can also extend the area of improved land suitable for agricultural production. Development of cost-effective land management and conservation systems ensures better stability of farming enterprises, thus

allowing land to remain in agricultural production. Application of some methods developed or tested by the program could lead to land degradation (e.g., irrigation). The extent, complexity and severity of Canada's land degradation problem (erosion, salinization, loss of organic matter, compaction, acidification), as well as the development of conservation methods to control degradation and habitat loss, have received insufficient attention until recently, relative to the economic and environmental importance of the land resource involved.

FPLU IMPLICATIONS:

Overall, application of the outputs of Agricultural Research on Natural Resources can have very significant effects on land management in Canada. If the research is directed primarily to increases in agricultural production, in contrast to long-term sustainability, it could have significant negative effects on the land resource. Alternatively, research could be directed towards improved land and water management practices for sustained yields and the longer term goals of soil and water conservation. Then very positive land impacts can be anticipated. This research program can thus be either supportive of or run counter to the principles and policy statements of the Federal Policy on Land Use, depending on the direction it primarily takes.

MAGNITUDE:

Activity expenditures: $13,100,000 (1985-86)
(plus soil-related research under crop and animal programs -- perhaps $500,000).

AGRICULTURE CANADA

Research Branch

AG.2. Agricultural Research on Production Development

DESCRIPTION:

This research program seeks to increase the efficiency and quality of agricultural production through research and technology transfer. Activities are designed to determine optimum conditions of soil and climate for specific types of crops and animal production, to develop new and improved varieties of crops and new breeds of animals and to reduce losses caused by diseases, weeds and insects. As well, development of more efficient farm structures, machinery and management systems under the program contribute to improvements in production efficiency and product quality. Advisory services related to crop improvement are directed at enhancing crop production through use of land, water and climatic resources and by identifying constraints on expansion of production.

The national research program is carried out at 48 establishments across the country. Goals for these establishments are adapted to local conditions. While research is generally conducted by federal personnel and universities, much of the related extension work is performed by provincial employees.

POTENTIAL LAND IMPACTS:

Research on production development can play a substantial role in intensifying crop production and upgrading crop management, thus ensuring an efficient, stable and profitable agricultural industry. Development of superior crop varieties, new technical developments in seed, planting, pest control and farm machinery, and improved farm management methods and skills have the potential to change patterns of cropping and grazing, increase farm efficiency and production per unit area, and open some new land for farming. They may also release marginal farmland to competing uses without detracting from the volume of agricultural production. The development of crops for areas with shorter growing seasons has enabled agricultural production to move northward, while development of drought-resistant varieties has enabled a move into arid areas. Increased management and technology levels contribute to product quality and more intensive use of existing agricultural land. Producers may therefore increase returns per unit area and therefore be more competitive, thus maintaining land in agriculture.

Agricultural research stations hold over 30,000 ha of land (owned, rented or leased). In many cases, they provide green space and recreation area near or within urban centres. As a consequence, they often face urban development pressures.

FPLU IMPLICATIONS:

Improved crop varieties, management systems (rotation, minimum tillage, etc.) and machinery can increase crop yields. They may also hide, or even contribute to the deterioration of the soil's inherent productivity through erosion, salinization, compaction, etc.. These are important considerations for future production. Research programs in this area then must combine increased crop production efficiency with soil conservation strategies.

MAGNITUDE:

Activity Expenditures: $177,934,000 (1985-86 est.)
$163,634,000 (1984-85 est.)

AGRICULTURE CANADA

Crop Degradation Insurance

Farm Income Services Branch

AG.3. Crop Insurance

DESCRIPTION:

The Crop Insurance Program helps the provinces establish all-risk crop insurance to protect individual Canadian farmers against natural production hazards beyond their control. These include hail, wind, frost, flood, drought, insect infestation and disease. In addition, some perils specific to some crops are covered in individual plans (e.g., excessive moisture causing sprouting in wheat). Protection is provided during the actual production stage, from the time the crop is planted until it is harvested. The program guarantees production on a per unit basis, usually 80% of the five-year average production level for a crop by a given producer. The Crop Insurance Program does not cover losses resulting from poor management practices. Compensation for crop damage by wildlife depradation is also available, both through certain Crop Insurance agreements and the Waterfowl Crop Damage Compensation Program.

The federal government supports provincially-operated but federally-approved plans by contributing a portion of premium costs and/or administrative costs. It also shares the risk by loans or reinsurance, whenever indemnities greatly exceed premiums and reserves. For the provinces of Québec and Newfoundland, the federal and provincial government each pay 25% of the premium costs and share the total administrative costs on a 50/50 basis. For the other provinces, the federal government contributes 50% of the total premium and the provinces pay the total administrative costs. The individual farmers thus pay no more than 50% of the total premiums. Crop insurance can also be used as security on crop production loans. Farmer participation in the program is voluntary.

POTENTIAL LAND IMPACTS:

The Crop Insurance Program provides a financial safety net to producers by minimizing the fluctuations resulting from crop production losses due to unavoidable natural hazards. It thus contributes to productive agricultural investment, and facilitates the economic viability of farming. By ensuring crops against specified risks and by guaranteeing a certain level of production at a specified price, the program cushions the effects of poor production, and therefore maintains farmland in use during occasional years of production problems. To the extent that this program strengthens the economic position of farmers by providing a financial cushion against natural calamities, it allows them to compete more easily for land with other users.

This support could also affect the allocation of agricultural land amongst crops, since it can influence the choice of crops to be planted. That is because premiums vary by level of risk for a crop, and insurance coverage may be provided only to those who grow recommended varieties of crops. The program could also be used to discourage cultivation of a crop too "risky" to grow in a given area -- for example an area subject to soil erosion or other types of soil degradation.

The Crop Insurance Program can help to ensure that a farmer is not forced to abandon agriculture through climatic circumstances beyond his control: this element of certainty imparted by crop insurance along with stabilization programs adds stability to farming enterprises, maintaining management skills and encouraging long-term inputs to the farm operation and the farmland.

FPLU IMPLICATIONS:

In general, the program supports the objectives and guidelines of the Federal Policy on Land Use.

MAGNITUDE:

Federal contribution to the Crop Insurance Program:	$150,529,000 (1984-85 est.) $145,338,000 (1983-84 est.)
Waterfowl Crop Damage Compensation Program:	About $3.5 million.

Farm Income Services Branch

AG.4. Agricultural Stabilization Board and Agricultural Products Board

DESCRIPTION:

The Agricultural Stabilization Board is a price support agency which protects the incomes of agricultural producers against market price fluctuations. The Board makes deficiency payments directly to commercial producers in years of low financial returns, which usually result from domestic or international supply surpluses, or rapid increases in input costs. Named commodities must be supported at a minimum of 90% of the previous five-year average market return, indexed for changes in the cash cost of production (inflation). These commodities include cattle, hogs, sheep; industrial milk and cream; corn and soybeans; and oats and barley grown outside the Canadian Wheat Board designated area. Other agricultural products may also be designated for price support at the same level. Since all producers of a commodity receive the same deficiency payment per unit of weight, the more efficient producer gets relatively more assistance.

The Agricultural Products Board undertakes commodity purchase and resale programs to protect farm returns against significant downward fluctuations in commodity market prices. It intervenes in the agricultural market place when a glut of product occurs. The Board is empowered to buy, sell or import agricultural products; to store, transport and process such products; and to administer food contracts and other commodity operations. It may purchase and hold reserve stocks of agricultural products for later sale, emergency relief purposes in Canada and food assistance programs abroad. Rather than subsidize the individual producer, the Board usually contracts with a processor or wholesaler.

The Agricultural Stabilization Board and Agricultural Products Board programs are intended as temporary relief measures to protect commercial producers against the vagaries of the market place and not as long-term financial support for non-productive operations.

POTENTIAL LAND IMPACTS:

The Agricultural Stabilization Board and Agricultural Products Board programs act as a safety net cushioning the effects of market surpluses and poor prices for agricultural commodities. By stabilizing the prices of agricultural products, they assist efficient agricultural producers to realize fair returns for their labour and investment, and to maintain a fair relationship between prices that they receive and the costs of goods and services that they buy. Through

ensuring a stable agricultural economy, these programs generally facilitate the economic viability of farming and the maintenance of farmland in production. The stability provided to farming enterprises encourages the agricultural operation to undertake long-term planning and investment, thus helping the farmer not only to preserve, but also to expand and intensify crop area, to improve management skills, and to undertake farmland conservation practices.

These programs are intended to limit damage to producers of supply/price fluctuations caused by the vagaries of the market-place. They may, however, through continual application, encourage continuing over-production in some industries (e.g., potatoes in the Maritimes) resulting in excessive allocation of land to certain agricultural crops. In some instances, poor agricultural practices (e.g., lack of crop rotation) which cause degradation of the land resource may also be maintained. By reducing the risk factor, these support programs could help to encourage some farmers to extend their operations into higher risk marginal areas, which may infringe high capability wildlife habitat or other resource lands. Some farm organizations are concerned with the adequacy of levels of financial support in ensuring the survival of farm enterprises and effective use of land for agriculture.

FPLU IMPLICATIONS:

These concerns and potential land impacts should be closely monitored and program criteria modified in accordance with the Federal Policy on Land Use, if warranted.

MAGNITUDE:

	1984-1985 (est.)	1983-1984 (est.)
Contributions under the Agricultural Stabilization Act:		
Designated agricultural commodities	$ 11,000,000	$ 11,000,000
Named agricultural commodities:		
- Industrial milk and cream	$301,200,000	$297,500,000
- Other	$ 90,000,000	$ 70,000,000
Expenditures under the Agricultural Products Board Act for the purchase, storing, transportation or processing of agricultural products	$ 5,565,000	$ 5,300,000
TOTAL	$407,765,000	$383,800,000

AGRICULTURE CANADA

Farm Income Services Branch

AG.5. Western Grain Stabilization Program

DESCRIPTION:

The Western Grain Stabilization Program is designed to stabilize the income of western grain farmers by protecting them against sharp drops in net cash income from the sale of eligible grains. The program covers seven major grains (wheat, oats, barley, rye, flax, rapeseed, and mustard) which are grown in the Canadian Wheat Board designated area (i.e., the Prairie Provinces). Annual contributions by grain producers (2% of gross sales to a maximum of $1,200) and the federal government are held in a special stabilization fund. In a year when the net cash revenue from sales of prairie grains is less than the average for the preceding five years, a stabilization payment roughly equal to the difference is made from the fund to participating farmers. The share of any payment issued to any individual producer is directly proportional to his contributions to the fund during the last three years. Contributions paid by the federal government are funded under the Grains and Oilseeds Program of External Affairs.

POTENTIAL LAND IMPACTS:

The Western Grain Stabilization Program protects the income of prairie grain producers from market price instability. By providing a more stable economic environment for the farm operator, it generally facilitates the economic viability of prairie grain farming, and the maintenance of farmland in production when poor returns in a particular year might otherwise force them out of production. If the payments are generally sufficient, the stability provided may allow the agricultural operator to undertake long-term planning and investment, which can result in cropland expansion, intensification of production, innovation, improved farm management and adoption of soil conservation practices among prairie grain farmers. In contrast, the increased protection offered by the program could help to encourage some farmers to extend their operations into higher risk marginal areas, which may infringe on high capability wildlife habitat or other resource lands. Nevertheless, from a land management perspective, this program appears to have an indirect, but generally positive, influence.

FPLU IMPLICATIONS:

Assessment criteria should be developed and incorporated into the review process to reflect the policy statements and guidelines of the Federal Policy on Land Use.

MAGNITUDE:

Contributions of the Federal Government under the Western Grain Stabilization Act:	$150,000,000 (1984-85 est.) $140,000,000 (1983-84 est.)

AGRICULTURE CANADA

Farm Income Services Branch

AG.6. Farm Improvement Loans: Loan Guarantees

DESCRIPTION:

Loan guarantees provided under the Farm Improvement Loans Act enable farmers to obtain short- and intermediate-term credit for the purchase of agricultural implements and foundation livestock, and the financing of a wide range of farm improvement projects. They also enable farmers to purchase land where such land is an addition to the existing farm and is to be used for farming. The applicant may use loans to finance up to 75% of the cost of livestock and equipment and up to 90% for other purposes. He must be in possession of a farm (as owner or tenant) and his principal occupation must be the operation of that farm. The loans are made by designated lenders (including chartered banks) under a government guarantee of repayment. The maximum interest rate chargeable is the prime rate plus 1%. The maximum amount that may be outstanding to a farmer at any one time under the Act is $100,000.

POTENTIAL LAND IMPACTS:

The Farm Improvement Loans Program facilitates the purchase of land, machinery, implements, livestock and other factors of production necessary for modern, capital-intensive agriculture. Credit availability to commercial farmers for such purchases and improvements helps to keep farm operations abreast of new technology and methods, thus contributing to the intensive use of agricultural land and the maintenance of land in farming. The availability of credit for the purchase of additional land can encourage increases in farm unit size and, sometimes, the expansion of land used for farming, and a corresponding reduction in which might be available land for other resource uses. Also, by providing funds for the improvement of living conditions on the farm, the Farm Improvement Loans Program strongly supports the family farm concept, with subsequent effects on land-use patterns.

If debt and investments are managed properly, the use of credit can assist the development of modern viable farm enterprises. But, given a lack of adequate investment counselling or of farm management education and expertise, these loans could increase the level of debt and place farm businesses in jeopardy, thus leading to idle or underused land in the event of farm business failure.

FPLU IMPLICATIONS:

To ensure a positive influence by the program on the allocation of the land resource and the management of farmland, loan offices should be provided with specific approval guidelines, pursuant to the Federal Policy on Land Use. These should require review of improvements proposed under the loan with respect to the agricultural capability of the land base, the limitations of the soil, the undertaking of necessary conservation practices to minimize soil degradation and, where applicable, destruction of high capability habitat. In addition, the opportunity exists to establish specific loan funds to provide for land conservation improvements and practices.

MAGNITUDE:

Loans made: $200,000,000 (1983)
$205,000,000 (1982)

Regional Development Branch

AG.7. Federal-Provincial Agricultural Development Subsidiary Agreements under ERDAs

DESCRIPTION:

The new federal-provincial subsidiary agricultural development agreements (under Economic and Regional Development Agreements -- see program #RE.4) are designed to facilitate an improved economic performance within the agri-food sector through gains in efficiency. The agreements will contribute to the long-run sustainability of the sector through improved resource management practices. Overall, they aim to create additional employment and income opportunities within the agri-food sector and enhance the participating provinces' contributions to the national economy.

Priority programming areas include maintenance and development of crop and livestock production through technology development, field-scale demonstrations and the general adoption of new or improved production, processing and marketing technologies. Other priorities include soil and water conservation; development and management strategies for sustaining and enhancing agricultural productivity; and improving the access and ability of farmers to adopt practices and technologies related to efficient farm and resource management. Individual measures undertaken reflect the economic development opportunities of the agri-food sector in each participating province.

As of June 1986, agreements have been signed with five provinces, i.e. Prince Edward Island, New Brunswick, Manitoba, Saskatchewan, and British Columbia. Memoranda of understanding have been signed with Ontario and Alberta. Agreements with Newfoundland and Ontario are proposed. Agricultural development programs are still operating in Nova Scotia under a General Development Agreement scheduled to terminate in 1987. Agreements reached under ERDAs provide a means for Canada and the participating provinces to share the cost of approved programs. Agreements generally span five years.

The agreement reached with PEI addresses opportunities for further improvements in the production of swine, cattle, potatoes, forages and cereals. Emphasis lies in adoption of erosion-control practices, improved harvesting and storage facilities for crops, improved practices relating to reproductive physiology, modernization of handling, storing and distribution systems and farm business management support.

The Canada/New Brunswick agreement is designed to assist in enhancing the efficient production and marketing of livestock, livestock feed, potatoes, horticultural and specialty crops. New

approaches to marketing, improved productivity and product quality through upgraded technology and soil conservation measures and training in management and technical skills are the main areas covered.

The agreement with Manitoba focuses on grain, oilseeds, specialty and horticulture crops as well as livestock and livestock products. A great deal of the resources involved aim towards adoption of agronomic practices consistent with sustainable soil management, and include development of improved crop and livestock varieties, improved pest control methods, improved erosion-control and salinity-control methods and improved moisture management techniques, as well as farm business management support.

The agreement reached with Saskatchewan seeks development opportunities in crop intensification (especially cereals), livestock productivity improvement, soil conservation and irrigation development. Specific projects include development of new crop varieties and new pest-control technology; demonstration of new or recommended crop production and management technology such as conservation tillage and moisture management techniques to improve rate of adoption; improved livestock management practices; studies of snow management, irrigation methods and saline soils reclamation; and development of new or enlarged irrigation projects.

POTENTIAL LAND IMPACTS:

The new federal-provincial agriculture development subsidiary agreements have the potential to create a series of land impacts by encouraging increased productivity and sound management practices, as well as enhancing farm economics. Research programs which result in higher crop yields, greater disease resistance, improved varieties and new technologies enable a more intensive use of agricultural land which allows for increased productivity from the soil. Research application can therefore assist to maintain and extend the area of improved agricultural land and to increase returns per hectare. Extensive application of new technical developments in seeding and pest control, as well as improvement of overall farm management methods and skills, may also tend to (1) change patterns of cropping and grazing, (2) increase farm efficiency and (3) improve production per unit area. However, application of research results, if not properly managed, could lead to more extensive soil degradation problems.

Soil management and conservation research can develop improved soil management methods that have potential for changing cropping systems and crop distributions while maintaining the physical capability of the agricultural land resource. Development of practices to control water and wind erosion, or salinity can help prevent further land degradation. As well, advances in irrigation technology (e.g. in Saskatchewan), including effluent irrigation, water-conserving land management techniques and control of salinity have the potential to change farming systems (e.g. summerfallow rates). Adoption of practices though will take place only in relation to how well research demonstrates actual benefits of these methods and techniques and by farmers with sufficient income, information and motivation to consider changes in their land management practices.

Agricultural support programs which focus on certain specific crops or types of livestock may cause changes in cropping patterns to the favoured crops or livestock. Though these may improve the productivity rates and enhance the economic viability of farm enterprises, they may also encourage exploitation of land of marginal capability for agriculture (CLI classes 4-6), but of good capability for other resource uses.

Some agreements provide for technical assistance to enable farmers to develop and maintain viable farm enterprises. To the extent that such programs strengthen the economic position of the farmers and improve farm incomes through more efficient handling, storage and marketing of agricultural products, they facilitate the maintenance or expansion of farmland in production and increase the potential for adoption of new farm management practices.

Research and marketing information programs can serve as a basis for informed decisions on land use and land management. They may assist in ensuring the use and management of agricultural land as a highly productive, but sustainable, resource over the long term.

FPLU IMPLICATIONS:

The agricultural subsidiary agreements should comply explicitly with the guidelines of the Federal Policy on Land Use through provisions to this effect in the agreements. More specifically, operational guidelines and criteria for the review of projects proposed under the sub-agreements should be developed to en ure that such projects comply with the policy statements and guidelines of the FPLU.

There is for example a need for agreements to target the most appropriate land for drainage or for irrigation, that is, lands that would derive significant benefit above investment costs from the improvements. The environmental effects on the land resource must be considered when irrigation or drainage projects are reviewed in order to minimize the potential to remove land from other uses for which it may be highly suited (e.g., wetlands, woodlands and wildlife areas). Agreements should also contain criteria to ensure that federal funding does not encourage use of marginal agricultural land of good capability for other resource uses.

MAGNITUDE:

Signed Agreements	Federal Share	Provincial Share	TOTAL
Canada-PEI	$ 26,000,000	$ 15,000,000	$ 41,000,000
Canada-New Brunswick	$ 25,000,000	$ 7,000,000	$ 32,000,000
Canada-Manitoba	$ 23,000,000	$ 15,300,000	$ 38,300,000
Canada-Saskatchewan	$ 30,000,000	$ 30,000,000	$ 60,000,000
Canada-British Columbia	$ 20,000,000	$ 20,000,000	$ 40,000,000
TOTAL (Five years)	$124,000,000	$ 87,300,000	$211,300,000

Regional Development Branch

AG.8. Production Development: Crop Production

DESCRIPTION:

The Crop Production Division of the Production Development Directorate aims at developing a crops industry that can effectively compete in an expanding market. It coordinates the field activities of the Department of Agriculture relating to the production of crops. The Division also works closely with other departments of the federal government, with provincial governments and with producer organizations and others to maintain a coordinated approach to the development of the crop industry. As well, it administers the New Crop Development Fund, included under the Crop Improvement element of the Research on Production Development activity (see program #AG.2). This fund has an annual budget of $750,000, supporting a number of production development projects carried out by universities, producer groups, industry associations and commercial organizations.

POTENTIAL LAND IMPACTS:

By promoting the development of a viable crops industry that focuses on the most marketable, high value commodities, the Crop Production Division can help strengthen the economic position of farmers. This would allow farmers to remain in business and to compete more easily for land with other users. It may also in some instances utilize lands with high capability for other resource uses. The program may also encourage the adoption of new, more productive crops with the potential to intensify and in some instances, extend agricultural land use with crops suited to more severe climates and soil conditions. In this way, patterns of cropping will change as new crops (e.g., hybrid corn, canola) displace less valuable varieties, and production per unit area will increase. Land conservation practices need to be followed by producers since the adoption of some new crops such as hybrid corn can increase the potential for soil degradation.

FPLU IMPLICATIONS:

The program should include a focus on developing and demonstrating crops that will facilitate soil conservation (i.e., through nitrogen fixation or water retention or as economically lucrative rotation crops) in order to contribute to the objectives of the Federal Policy on Land Use.

Prairie Farm Rehabilitation Administration (PFRA)

AG.9. Water Conservation and Development Programs

DESCRIPTION:

PFRA provides engineering and/or financial assistance, as well as technical and information services, regarding water conservation and development projects to individuals, groups, and small communities in the Prairie Provinces. Project assistance is provided through the Rural Water Development Program, the Water Development and Drought-Proofing Agreements with Manitoba and Saskatchewan, the Alberta Irrigation Rehabilitation Program and the Demonstration Farm. Other PFRA programs facilitating water development include the Southwest Saskatchewan Irrigation Projects, the South Saskatchewan River Project and the Assiniboine River Diking Program.

The Rural Water Development Program provides technical and financial assistance for water development in the form of on-farm and small community wells, dugouts, stockwatering dams, reservoirs and pipelines. Water supplies are thus made available for municipal, domestic, livestock and irrigation uses in an effort to drought-proof prairie farms against recurring dry years.

The Water Development and Drought-Proofing Agreement with Manitoba funds various studies investigating the provision of water supply and delivery projects where presently needed, and the improvement of future water management in the province. The Saskatchewan Agreement provides for federal-provincial cost-sharing of water development and management projects, groundwater investigations, and drought analysis studies.

The Alberta Irrigation Rehabilitation Program is a federal-provincial agreement that transfers Canada's interest in the St. Mary and Bow River irrigation projects to the province. Among other things, the agreement calls for PFRA to replace or repair four major irrigation structures.

The Demonstration Farm at Outlook, Saskatchewan provides information to producers on irrigation systems, water management techniques, special-crop production and developments in agricultural technology. It demonstrates the application of recent research to actual farm production and encourages the adoption of irrigation farming techniques and water conservation methods among prairie farmers.

POTENTIAL LAND IMPACTS:

The PFRA water conservation and development programs facilitate the preservation, management, development and use of the water resource to support the survival and growth of farming enterprises in the low precipitation areas of Manitoba, Saskatchewan and Alberta. Advances in irrigation technology enable a more effective use of land and make the land now in agriculture more productive. Irrigation works financed and developed under PFRA have the potential to change large tracts of unproductive land into thriving farming areas, and facilitate expansion and improvement of farmland, more intensified land use, and changes in farming systems and crops grown. By encouraging farmers and ranchers to develop on-farm water resources, PFRA programs promote more stable and intensive agricultural use of the land resource through the development of measures for long-term drought mitigation.

Dissemination of innovations in irrigation technology by PFRA assists producers in achieving more productive use of their agricultural land. Assistance in provision and improvement in the quantity and quality of water supplies to small farming communities helps to improve the quality of life for residents and ensure that the basic agricultural and community infrastructure (farm suppliers, transportation, marketing, community services) are maintained for nearby agricultural operators. The reservoirs created for such projects may also be used for a number of purposes, including water-based recreation, and serve as a focus for park and recreation areas (e.g. Diefenbaker Lake). In general, these water development and irrigation development activities result in net improvements to wetlands and related habitat.

On the other hand, irrigation of some soils in the southern prairies along with current agricultural practices can cause salinization, which degrades the soils and dramatically reduces crop yield. Building of reservoirs for irrigation can flood wetlands and other wildlife habitat. Water diversions and altering of the water table levels can cause the loss of many small, scattered wetland habitats for wildlife. Intensive farming practices supported by irrigation can also impact habitat and other uses of the land resource. In some cases, construction, maintenance and environmental costs may exceed the long term benefits of the irrigation project.

FPLU IMPLICATIONS:

This program is important for encouraging good soil and water conservation practices on the Prairies in support of the FPLU. Recent steps to target lands most appropriate to irrigation, and to consider the effects of irrigation on water and soil resources and other land uses, for example, appear to support the Policy.

MAGNITUDE:

	1982-1983	1981-1982
Program expenditures:		
Rural Water Development Program	$ 8,937,750	$ 8,816,600
Water Development and Drought-Proofing Program:		
Manitoba Agreement	$ 914,882	$ 1,589,411
Saskatchewan Agreement	$ 3,007,394	$ 1,715,301
Alberta Irrigation Rehabilitation Program	$ 60,868	$ 178,720
Demonstration Farm	$ 544,509	$ 180,759
Southwest Saskatchewan Irrigation Projects	$ 1,532,749	$ 1,198,241
South Saskatchewan River Project	$ 131,971	$ 111,606
Assiniboine River Dyking Program	$ 35,217	$ 74,043
TOTAL	$15,135,340	$13,864,681

Prairie Farm Rehabilitation Administration (PFRA)

AG.10. Community Pasture Program

DESCRIPTION:

The Community Pasture Program administered by PFRA was designed to stabilize and rehabilitate lands unsuitable for cereal production following the Dust Bowl years of the 1930s. Community pasture lands were made available primarily through Crown landholdings and by agreements with Saskatchewan and Manitoba. These pastures are seeded to forage and used for summer-grazing of cattle. The program utilizes management practices that permit the continuing use of these lands for purposes compatible with their production capabilities.

Grazing privileges are allocated to benefit smaller producers and are scaled in an inverse proportion to each individual's owned, leased or rented land resource. Operation and maintenance costs are borne by patrons of the pastures through a schedule of grazing fees. In-pasture services such as breeding services are provided at cost. In 1985-86, PFRA operated 87 community pastures within these two prairie provinces on lands totaling about 900,000 ha.

POTENTIAL LAND IMPACTS:

The Community Pasture Program has made possible the removal of sub-marginal lands from more intensive agriculture for which the soils and climate are not suited, and facilitated improved pasture through the rehabilitation, conservation and management of these lands.

The grazing areas developed and managed by PFRA serve the following purposes:

(1) supply small nearby farms with the necessary pasture area to continue in production.

(2) enable farms to increase their livestock holdings and increase their sales.

(3) allow some farms to diversify from crop production into livestock herding by use of these areas.

(4) through forage crop production, supply forage to support livestock enterprises in adjacent farming areas.

Nearly one million hectares of grassland largely unsuitable for permanent cultivation has been conserved in a viable pasture use through the application of sound range management principles under the Community Pasture Program. In general, the program has conserved the land resource in pasture uses suited to its capability, facilitated and increased the long-term economic use

of the land for livestock production and provided a resource to improve the production, sales and incomes of surrounding farms, thus maintaining their land in agricultural production.

Lands devoted to community pasture might potentially be used for multiple purposes, particularly as wildlife habitat for animals and birds.

FPLU IMPLICATIONS:

Generally, this program is supportive of the guidelines of the Federal Policy on Land Use through facilitating land allocation and management appropriate to land capability. A strengthened multiple-use component (agriculture and wildlife) would further enhance the program's positive effects on the land resource.

MAGNITUDE:

	1982-1983	1981-1982
Program expenditures:*		
Community Pasture Administration and Operations	$ 8,908,640	$ 7,839,147
Community Pasture Improvement and Development	$ 1,488,212	$ 1,572,414
TOTAL	$10,396,852	$ 9,411,561

* This program is run on a cost-recovery basis. In 1985-86: 220,000 head of livestock and 400 patrons were served.

AGRICULTURE CANADA

Prairie Farm Rehabilitation Administration (PFRA)

AG.11. Tree Distribution Program

DESCRIPTION:

The Tree Distribution Program is operated by PFRA's Tree Nursery at Indian Head, Saskatchewan. Through this program, approximately six million tree and shrub seedlings are distributed annually, free of charge, to prairie farmers for field, farmstead and roadside shelterbelts (windbreaks). Seedling stock is also provided to federal and provincial departments for wildlife, water and soil conservation planting programs, to villages, towns and cities for shelterbelt plantings and beautification projects, to charitable organizations (such as 4-H) for plantings on land serving the public without charge and to Indian Band Councils for plantings on reserves.

POTENTIAL LAND IMPACTS:

By providing the tree stock for farm shelterbelts on Canada's prairies, the Tree Distribution Program assists in the prevention of soil erosion by wind, thus promoting conservation of the land resource for agriculture and other purposes. Shelterbelts also protect soil, crops and livestock against extremes of weather, conserve and store soil moisture which can be utilized by adjacent crops, beautify the landscape and provide wildlife habitat. Yields of forage and cereal grains may be improved by the moderate microclimate created by tree belts. The principal impact of the Tree Distribution Program, through the development of shelterbelts, is conservation of the soil resource which can serve as a basis for improved agricultural production and income, and ultimately, maintenance of the land in productive farming use. Shelterbelts can also serve recreational and aesthetic purposes for the rural community and foster an awareness of conservation values.

Shelterbelts have sometimes been removed to provide additional land for cropping or to increase field sizes to accommodate large farm machinery. Removal of tree belts, however, is usually false economy, because of the resulting soil degradation.

FPLU IMPLICATIONS:

This program is consistent with and supportive of the objectives and guidelines of the Federal Policy on Land Use with respect to conservation of the land resource. Measures might be considered, however, in this or related programs to actively discourage farmers from removing existing shelterbelts.

MAGNITUDE:

Program expenditures: $2,325,691 (1982-83)
$1,812,048 (1981-82)

Prairie Farm Rehabilitation Administration (PFRA)

AG.12. Soil Conservation Service

DESCRIPTION:

The Soil Conservation Service of the PFRA provides technical assistance in assessing the extent and severity of soil degradation throughout the Prairies, and develops proposals for dealing with soil problems. Pilot projects have been established in the three prairie provinces to provide field experience in the appraisal of soil conservation problems, diagnosis, remedial recommendations and implementation, all of which will benefit soil conservation programs. The agency is endeavouring to cooperate with other departments of the federal government, provincial and municipal governments, universities and farm organizations in solving soil problems. It recently produced a major report entitled Land Degradation and Soil Conservation Issues on the Canadian Prairies (1983) detailing the nature and costs of soil degradation.

POTENTIAL LAND IMPACTS:

The Soil Conservation Service, by providing information on the nature and extent of the soil degradation problem on the Prairies and proposals on conservation measures, can assist in providing a basis for informed decisions on land use and land management, both by individual landowners and government policy-makers. It has the potential to improve and encourage the adoption of soil conservation methods and techniques on the farm which, over the long term, can improve soil quality, change cropping systems and crop distributions, increase farm production per unit area and enhance downstream water quality. Research leading to cost-effective soil conservation practices, if adopted, could assist the individual farmer in using the land in a more conserving, less exploitive manner, and keeping the land currently in agriculture productive over the long term.

FPLU IMPLICATIONS:

In order to have a real impact on solving land degradation problems, this and other government agencies would require considerably more resources for research, demonstration and extension services. Given the cost squeeze farmers often face in the short term, various public financial incentives may be necessary to encourage adoption of those soil conservation practices which only provide economic returns over the long-term.

Canadian Forestry Service

AG.13. Research into Improving Forest Productivity

DESCRIPTION:

The Canadian Forestry Service (CFS) conducts research aimed at finding ways of improving forest productivity in order to sustain the economic utilization of Canada's forest resource. Research efforts are directed towards methods of forest renewal and stand management. Studies of soils, fertilizers, genetics and tree biology provide information for improvements in forest management. Methods are sought for increasing forest yields and improving harvesting and reforestation practices. CFS publishes research results, and provides technical advice and scientific information to federal departments and agencies, the provinces, industry and academic institutions.

POTENTIAL LAND IMPACTS:

The development, demonstration and transfer of innovations aimed at solving problems and increasing the efficiency and effectiveness of all aspects of forestry management has the potential to contribute to the wise use and management of Canada's forest resource base, encouraging changes in land use and land management practices -- if the private sector and the provinces utilize the research results.

The conduct of research and the extensive application of the results related to new species, production methods, forest protection and the like can alter the productivity of forest lands and change the type or amount of land required for different tree species, ultimately altering the use of significant land areas. Improvements in seeding techniques and planting maintenance or upkeep may offer considerable savings -- in the millions of dollars -- to forest renewal over the next 20 years. Thus, improvements in forest productivity through improvements in management and technology may provide long-term economic gains in the form of a more stable supply of wood and production of higher quality wood in a shorter time span. Each of these aspects will contribute to a more favourable position on the export market, thus affecting both the viability of the forest industry and land used for this purpose.

The direct influence of CFS on forest management improvement and on reducing questionable management practices such as non-selective clearcutting or lack of reforestation is limited because of provincial jurisdiction over most forest resources, the leasing of Crown land by private companies and the private ownership of woodlots in eastern Canada. In addition, research efforts are modest compared to the size of the industry and the extent of Canada's landmass in forests.

FPLU IMPLICATIONS:

This forest research program, nevertheless, has the potential to significantly influence the management for sustained forest yield of wide expanse of Canada's land mass, particularly if it is focussed on land management concerns such as reforestation, cutting practices, practices to reduce soil erosion and similar measures. It is important for the program to ensure that its research results are made widely available and followed up by public and corporate decision-makers for the forest land resource.

MAGNITUDE:

Forest production research expenditures: $8,200,000 (1984-85 est.)
168 person years

AGRICULTURE CANADA

Canadian Forestry Service

AG.14. Energy from the Forest: Biomass Production

DESCRIPTION:

The Energy from the Forest (ENFOR) program is a contract research and development program aimed at generating knowledge and technology to markedly increase the contribution of forest biomass (i.e. all forest vegetation: branches, tops, cull trees, sawdust) to Canada's energy supply. The Canadian Forestry Service (CFS) administers the ENFOR Biomass Production component which conducts research into biomass supply, including such items as inventory, growth, harvesting, processing, transportation, environmental impacts and socio-economic impacts and constraints. The other component, Biomass Conversion, deals with the technology of converting biomass to energy and is administered by Energy, Mines and Resources.

A policy and planning committee oversees the ENFOR program, while technical committees develop priorities, assess proposals and make recommendations. Approved projects are contracted to the private sector, with ENFOR normally providing total funding and distributing the results.

POTENTIAL LAND IMPACTS:

ENFOR supplies the necessary forest biomass data (amount, form and location of forest biomass) to make policy decisions in both forestry and energy as to the potential contribution of biomass to the nation's energy requirements. ENFOR conducts projects which help determine the availability of biomass for energy, develop the specialized equipment and systems needed to harvest biomass, and determine the degree to which biomass can be grown as an energy crop. By developing improved methods of producing energy from forest resources, ENFOR may help to increase the contribution of forest biomass to Canada's energy supply and, in so doing, reduce the nation's dependence on foreign energy sources. R and D activities under the ENFOR program have the potential to increase the land area devoted to biomass production, with a wide range of consequences for land use as noted below.

Forest biomass may be converted to fuels, heat and then steam which, in turn, can generate electricity; it thus represents a potential renewable energy source which could replace fossil fuels and petrochemical feedstocks for up to 10% of Canada's primary energy demand, or some 130 milion barrels of oil per year. These changes would impact on land use through changes to other energy-related activities.

Another possible benefit would be to link reforestation of logged areas not intended for future forestry uses to biomass production. Costs of reforestation could thus be partially offset by future revenues from energy sales. The revenue from the sale of these trees could offset a large part of the costs associated with reforestation. Such reforestation would assist in soil conservation and watershed protection by reducing potential erosion and losses of nutrients and organic matter from the soil.

Resource-use conflicts may however arise because areas to be reforested are sometimes of good quality for agriculture. Also, a more intense use of the forest is involved, even though only biomass that is unmerchantable for traditional products would be used as an energy source. It is not certain that other uses such as soil conservation, water retention, wildlife habitat and recreation would be maintained unless special precautions in resource management are taken. Harvesting of woody biomass on a large scale without adequate control and planning may affect soil through disturbance, loss of organic matter, nutrient losses and erosion. Large scale harvesting may degrade wildlife habitat and affect water quantity and quality through elimination of the forest's beneficial effects such as control of water runoff and, in extreme cases, may lead to the flooding of low-lying areas.

FPLU IMPLICATIONS:

Biomass energy production has the potential to alter the productivity of forest lands and the use of significant land areas. As a consequence, criteria and guidelines pursuant to the Federal Policy on Land Use regarding the maintenance of the land as a renewable resource, both on-site and in surrounding areas, should be incorporated into all phases of the review and decision-making process of the ENFOR Biomass Program.

MAGNITUDE:

ENFOR funding (Biomass Production):	$1,625,000 (1986-87 est.)
	$1,250,000 (1985-86)
	$3,036,000 (1984-85)

Canadian Forestry Service

AG.15. Federal-Provincial Forest Resource Development Subsidiary Agreements under ERDAs

DESCRIPTION:

The new federal-provincial forest resource development agreements are designed to stimulate increased and improved levels of forest management by the provinces and industry with the ultimate aim of a self-sustaining and growing forest sector in Canada. Forest renewal measures, forest protection initiatives and employment development opportunities are emphasized. These include reforestation and stand improvement practices, silviculture, seedling production, stand tending work, plantation maintenance, forest nursery upgrading, the building of access roads and the upgrading of forest fire detection measures. As of March, 1986, agreements had been signed with all provinces. These agreements provide a means for Canada and the participating provinces to share the cost of approved programs aimed chiefly at improving the forest resource, increasing the sustainable supply of wood and heightening forest industry opportunities in each province. Agreements generally span five years.

POTENTIAL LAND IMPACTS:

In some regions, a significant problem has been encountered regarding the long-term sustainable supply of commercial timber species in sufficient volumes to support viable pulp and paper, sawmilling, wood products and related industries. The result has been threats to the income and employment often generated in small, single-industry towns. Failure to reforest cut-over areas, clearcutting, pest problems and the lack of sufficient forest management have reduced the commercial forest resource to critical levels in some areas of Canada, often leaving the land in an underutilized and depleted state.

Subsidies to the forest sector through ERDA Agreements for such activities as management improvement, reforestation or building of logging roads can affect the viability of the forest resource and the forest industry in different ways. These may cover both directly through the attachment of conditions and project approval criteria or by default through unconditional block funding. Resulting impacts on the land may be positive or negative, depending upon how forestry development is managed. Thus they have the potential to influence not only the use of land with forest capability, but also the land use and economy of entire regions.

Reforestation measures undertaken through ERDAs can make land a productive resource for future timber harvest while also protecting the land from erosion and reducing the risk of disturbance to wildlife habitat. Continual forest management can maximize wood production from a stand and

ensure fire and disease protection, thus encouraging the most productive use of land in forestry. Wise management of the forest resource, such as avoidance of unnecessary clearcutting, may help avoid the depletion of soils and the loss of water holding capacity, as well as protect wildlife habitat. But, contributions to the construction of logging roads, though necessary for access to forest harvesting, may be at the expense of necessary forest management and reforestation.

By assisting the forest industry, the implementation of these agreements can have significant impacts not only on forest land use itself but also on the use of the land by other sectors -- most notably recreation, agriculture and wildlife. Intensive forestry management, if incorrectly handled, may disturb wildlife and alter habitat. Forestry development may occasionally result in replacement of agriculture (usually marginal), or other uses. Also, by encouraging the viability and competitiveness of the forestry industry, these agreements have the potential to help create a better economic environment. Canada's position on the export market is thus improved and employment created, especially in communities dependent on the forest industry. In addition, by stimulating improved levels of management, the agreements may help to promote the more positive aspects of forestry development, with consequent impacts on land use.

FPLU IMPLICATIONS:

Forestry subsidiary-agreements should comply explicitly with the guidelines of the Federal Policy on Land Use (FPLU) through provisions to this effect in the agreements. More specifically, operational guidelines and criteria for review of projects proposed under the agreements should be developed to ensure that such projects comply with the objective and guidelines of the FPLU. Unconditional block funding should not occur.

MAGNITUDE:

Signed Agreements:	Federal Share	Provincial Share	Total
Canada-NS	$ 40,350,000	$ 30,550,000	$ 70,900,000
Canada-NB	$ 42,300,000	$ 35,100,000	$ 77,400,000
Canada-PEI	$ 13,700,000	$ 6,400,000	$ 20,100,000
Canada-Newfoundland	$ 54,720,000	$ 6,080,000	$ 60,800,000
Canada-Québec	$ 150,000,000	$ 150,000,000	$ 300,000,000
Canada-Ontario	$ 75,000,000	$ 75,000,000	$ 150,000,000
Canada-Manitoba	$ 13,580,000	$ 13,580,000	$ 27,160,000
Canada-Saskatchewan	$ 14,000,000	$ 14,000,000	$ 28,000,000
Canada-Alberta	$ 11,500,000	$ 11,500,000	$ 23,000,000
Canada-BC	$ 150,000,000	$ 150,000,000	$ 300,000,000
TOTAL:	$ 565,150,000	$ 491,210,000	$1,057,360,000

Related Agency that Reports Through the Minister of Agriculture

AG.16. Canadian Dairy Commission: National Dairy Program

DESCRIPTION:

The Canadian Dairy Commission (CDC) administers the National Dairy Program, a supply management program which provides efficient milk and cream producers with the opportunity of earning a fair return for their labour and investment, and provides consumers with a continuous and adequate supply of high-quality dairy products. This continuing program provides dairy support (1) through market-price support of butter and skim milk powder, and (2) through direct subsidy payments to producers of industrial milk and cream on all qualifying deliveries. These two aspects of the program are operated separately and receive funding in different ways. Market price support for butter and skim milk powder is accomplished by the CDC's offer-to-purchase program. Its funds are obtained as loans from the Minister of Finance and repaid by the proceeds from the resale of the products. Direct subsidies paid to producers of industrial milk and cream utilize funds provided through the Agricultural Stabilization Board. Under the National Dairy Program, the CDC also collects levies from milk and cream producers to pay the costs involved in selling surplus products on the world market. Import controls on manufactured products such as butter and cheese are also implemented.

POTENTIAL LAND IMPACTS:

Overall, the National Dairy Program facilitates the maintenance of dairy farmland in production through providing a stable economic environment for dairy farmers. The relatively stable markets and prices afforded by this supply management program have encouraged the planning and investment that has resulted in an industry of large, intensive production units that are modern, highly specialized and technologically sophisticated. Although the effects are not clear cut, there is probably less land devoted directly to dairy production under the National Dairy Program than there would be without supply management. The farms though are more specialized, intensive and productive under the stable marketing situation of the program. Dairying also requires supporting forage crops from other farms.

Nevertheless, the National Dairy Program does pose some land-use problems. Milk quotas are very expensive. Added to the price of acquiring a large, modern dairying operation, quotas can make the entry costs to dairying prohibitive for the young farmer. As a consequence, unless it is a farm remaining in the family, the difficulties of passing dairy farms and quota from one

generation to the next could ultimately mean some loss of land and investment from dairying to other intensive, high value, land uses.

MAGNITUDE:

Subsidy payments to Canadian dairy producers:	$268,219,710 (1983-84)
	$274,000,000 (1982-83)
Operating and capital expenditures of the Canadian Dairy Commission:	$ 5,976,700 (1984-85)
	$ 5,475,100 (1983-84)

Related Agency that Reports Through the Minister of Agriculture

AG.17. Farm Credit Corporation

DESCRIPTION:

The Farm Credit Corporation is designed to help competent Canadian farmers, and those wishing to become farmers, to purchase, develop and maintain sound farm businesses. Long-term mortgage loans available under the Farm Credit Act may be used (1) to purchase land, breeding stock and equipment, (2) to make improvements, (3) to consolidate debts and (4) for any other purpose that will facilitate the efficient operation of the farm. Cooperative ownership loans are available to syndicates of three or more farmers under the Farm Syndicates Credit Act for the joint purchase and cooperative use of farm machinery, buildings and installed equipment. Eligibility for FCC loans is determined essentially on the basis of management and repayment capacity. FCC loans are widely used since the Corporation will fix interest rates for up to 20 years and will take higher risks (at interest rates generally available commercially only to lower risk farmers). Also, the FCC's collection policy recognizes the volatility of farm incomes and the short-term cash flow problems such volatility can create.

POTENTIAL LAND IMPACTS:

FCC loans have allowed new farmers to enter agriculture, facilitating the transfer of farms and the development of new farm businesses. Funds from the FCC have helped farmers to consolidate their holdings, expand their operations, update their equipment and generally create modern viable enterprises. The long term credit has also imparted stability and certainty to assisted operations which has permitted farmers to plan and manage their land with a long term perspective. The Farm Credit Corporation has, in general, allowed more land to remain in agricultural production, caused land to be used more intensively and provided a stable situation in which soil conservation practices are more likely to be employed.

Although sufficient lending resources are presently available, the recent economic downturn and period of high interest rates sometimes found the FCC short of loan funds. It was accused of charging excessively high interest rates (still below market rates for comparable risks) and foreclosing when farms should have been allowed to survive. FCC loan ceilings have been considered as too low, particularly given the high land values and investment in horticulture and specialty farms. However, this problem has abated with the fall in farm asset values. If neighbouring farms are unable to effectively use the land foregone by a debt-ridden farm, then remedial financial and management measures by the FCC or other government agencies may be needed

to ensure that high capability farmland on these farms is managed effectively and remains in production over the long term. On the other hand, proper foreclosures may provide an opportunity for others to acquire sub-marginal lands in remote areas for other land resource uses.

FPLU IMPLICATIONS:

Studies are needed to examine alternative mechanisms of farm capitalization by the FCC and other institutions (in which, for example, the equity of farm assets is shared with other investors). These may develop methods to ease the problem of entrance to farming and debt load, thus ensuring that farmland remains well managed and productive.

MAGNITUDE:

	1985-86 est.	1984-85 est.	1983-84 est.
		($ 000,000's)	
New loans under the:			
Farm Credit Act	255.0	617.0	827.0
Farm Syndicates Credit Act	2.5	4.0	3.0
	257.5	621.0	830.0
Less:			
Repayments and refinancing	127.5	126.8	108.3
Capital market borrowing	40.0	-	250.0
TOTAL	90.0	494.2	471.7

Related Agency that Reports Through the Minister of Agriculture

AG.18. Livestock Feed Board of Canada: Feed Freight Assistance Program

DESCRIPTION:

The Livestock Feed Board of Canada administers the Feed Freight Assistance Program which subsidizes a portion of the transportation costs for movement of Prairie feed grains and Ontario wheat, corn and barley for use by livestock feeders in feed grain deficient areas in Canada. Deficient areas include the Yukon and Northwest territories, British Columbia, northeastern Ontario, northwestern Quebec (Abitibi-Témiscamingue), northeastern Quebec (Lac St-Jean), eastern Quebec (lower St. Lawrence River) and the Atlantic Provinces. The rate of freight assistance varies among these areas: it generally increases with distance from Central Canada. The demand for feed grains is influenced by changes in the number of livestock and poultry on farms, local feed production and relative prices of feed grains, among other factors.

In August, 1984, the legislation was changed to enable local cereal producers in feed-grain deficient areas to be eligible for transportation assistance. Prior to this change, only feed-grain producers from the Prairies and Ontario were eligible.

POTENTIAL LAND IMPACTS:

The Feed Freight Assistance Program helps to maintain the viability and competitiveness of livestock industries in feed-grain deficient areas and of grain growers in feed producing areas. By assisting in the transport of feed grains from the major areas of cereal production to the livestock industry in feed deficient areas, it ensures a ready market for grain farmers in producing areas and the availability of necessary inputs for livestock enterprises in deficient areas. Over the years, feed freight assistance programs have encouraged a higher allocation of land to feed-grain production in the prairies and corn in Ontario than might otherwise have been the case. A greater allocation of land to livestock raising in Atlantic Canada and other recipient areas has also been encouraged.

The other side of this national land-use pattern reinforced by feed freight assistance is the potential tendency for the transportation subsidies to encourage the dependency of grain deficient areas on feed sources from outside the region (as well as on the transport system) and to discourage grain production within the deficient areas. For example, relatively little grain is produced in Atlantic Canada, even though suitable hybrids, appropriate cultivation practices and land of sufficient capability exist in the region. However, it is unclear whether these

alone would be sufficient to ensure the necessary additional grain production in these deficient areas. A further effect of this program may well be the loss of wetlands habitat and other resource production foregone on the prairies to grain growing encouraged by feed grain assistance. The national consequences of this effect on habitat loss are partially mitigated by the reduced level of grain production in recipient areas as a result of the program.

The recent change in Feed Freight legislation (August, 1984) has the potential to encourage feed grain production in deficient areas, since local producers will also be eligible for freight subsidies. This modification could provide higher feed grain self-sufficiency for deficient areas and improve the security of supply for local livestock producers. At the same time, more distant producers of feed grains and corn in the prairies and Ontario, whose markets could be reduced as a consequence, would have to secure other markets or shift to other crops, with a resulting change in the land-use patterns there.

FPLU IMPLICATIONS:

The relative capability and physical limitations of the land resource for grain growing on a regional basis should continue to be monitored by the Livestock Feed Board of Canada. These factors should be taken into consideration in ensuring that future initiatives under the Feed Freight Assistance Program support the objectives of the FPLU.

MAGNITUDE:

Total program expenditures:	$16,552,000 (1983-84 est.)
Total expenditures for freight-assisted shipments:	$13,789,566 (1982-83) $15,368,113 (1981-82) $15,053,663 (1980-81)

CM.1. Housing Research, Development, Demonstration and Information

DESCRIPTION:

Under its mandate, CMHC undertakes, sponsors and financially supports information, educational and research activities directed towards the improvement of housing conditions and residential development in Canada. Through its research programs, CMHC examines housing and community planning matters, and the operation of the mortgage and housing markets, in order to identify housing problems and issues and to help resolve them. Studies are conducted to examine the changing demographic trends and rates of household formation, future housing requirements and the rehabilitation and renovation of the Canadian housing stock. The External Research Program supports investigations into the social, economic and technical aspects of housing. The Housing Technology Incentives Program assists in the design, fabrication, testing and reporting on innovations in residential construction and related technology. CMHC conducts a substantial publishing program to ensure that information on housing programs and issues is documented and disseminated.

One on-going research project, the Land and Infrastructure Mapping Program, is particularly relevant to land use. In this exercise, CMHC monitors the residential land supply in a rotating system which covers Canada's 28 largest urban regions every three years. Each report systematically records planning and piped infrastructure information, as well as land ownership, in the developing and pre-development land market areas. The regional updates are usually undertaken as joint ventures with local industry and government. All reports are promoted and sold.

CMHC's demonstration activities involve some direct residential land development. Individual parcels are acquired and developed from time to time to test or encourage public acceptance of innovations in planning, development and marketing.

POTENTIAL LAND IMPACTS:

Housing research programs, by contributing to the knowledge and understanding of housing problems and issues, have the potential to assist in the achievement of informed public decisions regarding residential land use, and more broadly, urban land use. They can develop new approaches and information bases which can be used by provinces and municipalities in planning the pattern, density and form of communities. By influencing local land planning, these research programs have the potential to affect the way urban land is used and serviced, as well as overall land requirements of cities.

Housing research and demonstration programs regarding new forms of community design and housing rehabilitation, if widely distributed and adopted by communities, can serve to encourage more compact urban form and rehabilitation of the existing area. Thus it may reduce the quantity of land needed for new housing on the urban fringe and improve the quality of life of residents by providing opportunities for more people to be close to jobs, central city amenities and a varied, inner-city living environment. Also, research for the improvement of infrastructure technology (e.g. Canwel -- local sewage treatment technology) has the potential to increase the flexibility in the location of infrastructure on shallow soils and steeper terrain which, in some cases, would allow deeper soils to be preserved for agricultural and other uses. Demonstration projects are usually relatively small and would not have major direct effects on surrounding lands.

FPLU IMPLICATIONS:

In general, the program is consistent with and supportive of the objectives and guidelines of the Federal Policy on Land Use.

MAGNITUDE:

Operating expenditures: $20,600,000 (1984-85)
$23,300,000 (1983-84)

Note: Current budget may be significantly lower.

SOURCE: CMHC Research Division.

CM.2. Social Housing Programs:
Continuing Cooperative Housing Associations.
Private and Public Non-Profit Housing Corporations.
Public Housing Assistance.

DESCRIPTION:

Social housing programs are designed to facilitate the supply of housing, and to assist low- and moderate-income Canadians in gaining access to adequate housing. These programs are delivered by CMHC, in conjunction with provincial and municipal governments, and private groups.

The Non-Profit Cooperative Housing Program provides financial assistance through proposal development funds, NHA-insured loans and operating subsidies to assist cooperative groups in developing, producing and operating modest, affordable housing appropriate to the needs of their members who have low and moderate incomes. Housing is obtained both through the construction of new units and the acquisition of existing accommodation. Eligible applicants under the program are Cooperative Associations, Indian Band Councils and groups of Indians.

Under the Non-Profit Housing Program, various forms of assistance are offered to private and public non-profit housing corporations to supply and operate affordable rental accommodation for low- and moderate-income families and individuals, elderly persons and special groups such as the physically or mentally handicapped. Included in this program are non-profit groups sponsored by native associations, serving native tenants in communities of over 2,500 population. The assistance offered to private non-profit housing corporations comprises proposal development funds, grants through the Community Resources Organization Program, NHA loans, annual operations assistance by CMHC to reduce rentals and assistance under the Residential Rehabilitation Assistance Program (RRAP). NHA loans and non-profit RRAP and annual operating subsidies are available for public non-profit housing corporations.

The Public Housing Programs are designed to provide appropriate, well managed and economical housing for families and individuals unable to obtain such accommodation at prices they can afford, in a satisfying community environment. Public housing projects may be obtained either through new construction, or acquisition and conversion of existing buildings. For participating provinces, 75% of the capital cost is provided by the federal government through CMHC, the remainder being provided by the province, or jointly by the province and municipality. Rents for accommodation provided in public housing are related to each tenant's income and family size. Any operating losses are shared by the participating governments on the same basis as the capital costs. In addition, accommodation may be obtained in privately-owned buildings for low-income families and individuals under the Rent Supplement Program.

POTENTIAL LAND IMPACTS:

Social housing programs can influence the cost, style and quality of housing, and the location, pattern and density of residential areas in an urban centre. In turn, this can influence the supply and demand for different types of housing, thus affecting the quantity and location of land required for residential use in a community.

Dependent on the planning policies of local governments and housing authorities, as well as the project approval criteria employed by CMHC, the location of housing projects may differ, resulting in various impacts. If centrally located, social housing may benefit its residents by being close to a higher concentration of jobs and urban amenities. A peripheral location, on the other hand, increases the distance from central city jobs, thus potentially creating transit problems for residents in social housing projects, while at the same time creating competition for land with agricultural uses. If heavily concentrated in the same area of a city, social housing projects might cause social problems and overtax the nearby social service facilities, while dispersed locations throughout the community may alleviate these problems.

FPLU IMPLICATIONS:

The availability of services and infrastructure for future residents and the compatibility of projects with surrounding land use should be specifically evaluated as part of the planning and approval process for each housing project. In order to undertake this evaluation, locational criteria and guidelines need to be developed.

MAGNITUDE:

	1984	1983
Operating expenditures:	$ 918,000,000	$ 756,100,000
Capital expenditures:	$ 959,546,000	$ 927,138,000
TOTAL	$1,877,546,000	$1,683,238,000

Note: Current budget may be significantly lower.

SOURCE: CMHC Social Housing Division.

CM.3. Housing Rehabilitation and Conservation: Residential Rehabilitation Assistance Program

DESCRIPTION:

Under the Residential Rehabilitation Assistance Program (RRAP), financial assistance is available from CMHC to assist in the repair and rehabilitation of substandard housing up to minimum health and safety standards, and to promote its subsequent maintenance. The RRAP program provides loans, which may be partially forgiven, to homeowners and landlords in selected areas for the rehabilitation of dwellings, to non-profit corporations and cooperatives and to Indian Reserves. In addition, non-profit corporations and cooperatives may obtain funds under this program for conversion of their residential properties to a different number of units.

As a prerequisite to the operation of the program, the municipality or the province in which the property is located must have adopted occupancy and building maintenance standards acceptable to CMHC. Then, for a dwelling to be eligible for RRAP assistance, it must be substandard in at least one of six basic areas: structural soundness, fire safety, electrical wiring, plumbing, heating or accessibility for a disabled person. Priority is given to repairs in these six basic areas, but certain other improvements are permissible, including installation of insulation and other measures to improve thermal efficiency. Delivery of the program is usually at the local level and is undertaken in most instances by municipal and provincial bodies or local non-profit housing organizations. About half the recipients of RRAP assistance live in rural areas or in communities with populations of less than 2,500 residents.

POTENTIAL LAND IMPACTS:

By assisting Canadians to conserve their housing accommodation through renovation and rehabilitation, RRAP helps provincial and municipal governments continue to accommodate the urban population in the existing built-up area of cities, thus encouraging the retention of older existing neighbourhoods in residential use, which may in turn remove the need for massive redevelopment of the area. RRAP can assist in the maintenance of the older existing housing stock accessible to central urban jobs and services, thus encouraging the economic health of the central community area, and affecting transit ridership and the demand for other urban services. At the same time, improvements to existing housing can reduce the need for new residential development on the urban fringe, development which has the potential to absorb land suitable for agriculture and other resource uses. Also, a well maintained housing stock, assisted by RRAP, may increase local real estate values and help to stimulate further public and private investment in community services and infrastructure within the areas receiving RRAP funding.

FPLU IMPLICATIONS:

The operation and effects of this program appear to be consistent with and supportive of the objectives and guidelines of the Federal Policy on Land Use.

MAGNITUDE:

Committments to capital budget:

	1984	1983	1982	1981
Rural RRAP	$ 90,111,000	$ 97,703,000	$ 77,142,000	$ 66,215,000
Urban RRAP	$ 81,647,000	$ 87,973,000	$ 55,400,000	$ 46,705,000
DINAD RRAP	$ 11,650,000	$ 11,130,000	$ 7,128,000	$ 4,474,000
Non-Profit	$ 5,980,000	$ 9,313,000	$ 9,703,000	$ 8,869,000
	$189,388,000	$206,119,000	$149,373,000	$126,263,000

Note: Current budget may be significantly lower.

SOURCE: CMHC, Residential and Community Improvement Division.

CM.4. Rural and Native Housing Program

DESCRIPTION:

The Rural and Native Housing Program (RNHP) utilizes the resources of the National Housing Act for the benefit of rural and native peoples. It is designed to provide financial assistance for improving housing conditions through a variety of grant and loan arrangements to low-income families in rural areas or in communities of less than 2,500 residents, and to native people on Indian reserves. Although this program helps to finance the construction of new housing projects and, to a lesser extent, the purchase of existing units, the greatest apportionment goes toward the rehabilitation of houses, which accounts for about 80% of homeowners assisted. In addition, assistance is made available to train and support local housing organizations so that they can address their own housing problems. Parts of the program, particularly the ownership/rental component, are under review at time of writing.

POTENTIAL LAND IMPACTS:

By providing better housing for families in rural Canada at prices and monthly payments they can afford, RNHP provides an incentive for housing development in rural areas and small communities. The affordable housing provided to people in northern and remote areas as well as Indian reserves allows them to remain in such locations so that they do not feel required to move to urban areas in search of adequate accommodation. In addition, RNHP improves the residents' quality of housing and hence, their quality of life in small communities which function as service centres for rural and agricultural areas, an importance aspect of the rural economy.

If local planning policies that protect agricultural land are not in place, or CMHC approvals under the RNHP are not based on adherence to local plans, then the program has the potential to support a scattering of rural housing on high capability resource lands.

FPLU IMPLICATIONS:

Approval criteria regarding the location of housing units under this program should be developed and applied to expressly consider the resource capability of the land and compliance with the guidelines of the Federal Policy on Land Use.

MAGNITUDE:

Rural and Indian and Northern Affairs Canada RRAP commitments: see program # CM.2.

Commitments (loans and grants) under federal-provincial agreements for the capital cost of housing projects:

	Units	$
1984	1,474	$53,268,000
1983	1,162	$3[illegible],393,000
1982	1,426	$49,200,000
1981	1,336	$42,921,000
1980	1,544	$50,451,000
1979	1,582	$49,481,000

Section 56.1 housing units committed on reserves:

1984	1,164
1983	987

Note: Current budget may be significantly lower.

SOURCE: CMHC, Rural and Native Housing Division.

CW.1. Canadian Wheat Board

DESCRIPTION:

The Canadian Wheat Board (CWB) is the sole marketing agency for wheat, oats and barley produced in Western Canada and sold in export markets, or in domestic markets for human consumption. It also controls the delivery of these and other major grains and coordinates their movement to terminal elevators. The Board also markets western feed grains within Canada, but not as the sole supplier.

The Canadian Wheat Board provides farmers with an initial payment on delivery of their grain to an elevator. It then sells the grain and "pools" the total returns from those sales so that it can distribute, in the form of a final payment, the proceeds to producers according to their share of those sales. There are six pool accounts: wheat, durum wheat, oats, barley, designated oats and designated barley. Each farmer receives the same level of payment for the same type and grade of grain, no matter when it was delivered during the crop year.

Since the Board cannot take delivery of all the grain at harvest time, it establishes quotas on grain deliveries to bring forward grain required to meet market demand, and to share market opportunities among producers. Every farmer has a quota base, which consists of all cultivated land, that is the land seeded to the six major grains, summerfallow, and miscellaneous crops, and may include all or part of land in perennial forage. This base is then used to calculate the quantities of grain that can be delivered when quotas are announced. In the 1982-83 crop year, a new program was introduced, assigning "bonus acres" to producers whose area in summerfallow and non-quota crop are less than one-third of their total area in the six quota crops.

The Board also administers the Prairie Grain Advance Payments Program which provides interest-free cash advances to producers in Western Canada for wheat, oats and barley stored on farms when exports and quotas are low. Advances, which are subject to quota restrictions, are repaid by deductions from payments for subsequent deliveries of grain.

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* A portion of the following is extensively drawn from Pidgeon (1984) and from the input of the Wheat Board to a draft of the current document (Walker, 1985).

POTENTIAL LAND IMPACTS:

The Canadian Wheat Board attempts to increase farmer returns through the strength of marketing under a single desk. By facilitating the sales of grain, in the face of the growing instability in the export demand for grain, the Canadian Wheat Board has the potential to expand or, at least, provide stability to the market for Canadian grain. Also, the Board's recent aggressive sales policy has increased the volume of its exports, the results for producers being larger markets and higher relative returns for their production. In this way, the Board enhances the viability of the Western grain industry, and helps to maintain and increase the area of land used for grain production.

Despite the benefits of its marketing services, some Board procedures, particularly the grain quota system, may have certain adverse consequences on grainland use, farming practice and soil quality. Nevertheless, it should be noted that a wide array of factors, in addition to the CWB quota system can also potentially affect farming practices and land use in Western Canada. These include: the Board's ability to market grain, the world grain situation, production costs, transportation rates, the weather, current technology and the effectiveness of extension programs. Given the various forces at work, it is not easy to isolate the impact of a single procedure, the quoted system, on land use. As a result, a number of "hypotheses" requiring further study are outlined concerning the potential impacts of the Canadian Wheat Board quota system on the land resource. The comments of the Canadian Wheat Board regarding these impacts are noted.

(a) The Quota System, it has been suggested, increases land-damaging summerfallow practices. By counting towards quota the land area devoted to summerfallow, the delivery quota system may encourage a greater extent and frequency of summerfallowing, a practice which many researchers suggest can lead to increased soil salinization, erosion, and lowered nutrient levels. Currently, a producer is granted rights to market a certain number of bushels for each unit of land which is considered to be "potentially cultivable". There is thus an economic advantage to break land in order to obtain rights to market a greater volume of grain. It is not clear how much land has historically been broken simply to acquire quota rights.

There appears to be some controversy regarding the importance of quotas in encouraging summerfallow. There are, however, few specific suggestions regarding how to alter quota policy to negate this effect. No matter how marketing rights are distributed, carryover stocks (thus markets) will tend to encourage summerfallow.

The Wheat Board has noted, however, that (1) quota policy is less likely to increase summerfallow due to the reduced carryover of grain in recent years and (2) that summerfallow practices for soil moisture retention remain essential to farming in arid regions of the Prairies. Demand for Canadian wheat in the past decade has at least kept pace with supply, so that in recent years farm carryover stocks of grain have been at historically low levels. Although summerfallow may leave some soils highly susceptible to wind erosion and (if one

accepts the saline seep explanation) speed up salinization, the practice is a necessary evil for many farmers in the most arid areas of the prairies such as southwestern Saskatchewan. Conversely, in the least arid areas of the prairies such as northeastern Saskatchewan, west-central Alberta and in Manitoba, summerfallow acreage is small. As a result, the Wheat Board suggests that the most expedient approach to reducing soil degradation would involve increased extension efforts to promote good husbandry and soil conservation measures on land in fallow, such as reduced tillage and improved stubble management.

It is not clear whether any changes in quota policy could reduce summerfallow and land clearing in marginal areas in the future, or even if policy changes could motivate producers to return certain marginal grain land to pasture. More research would be beneficial in assessing the impact of quota policy on summerfallow practices and soil conservation.

(b) The Quota System, some suggest, does not allocate marketing rights according to the productivity of the land. The current quota policy permits a farmer to sell a specific number of bushels per unit area regardless of actual yields. In effect, the quota system makes no direct allowance for the differences in productivity between farm units, and from one area to another. A farmer who produces consistently smaller yields in a climatically marginal area or on lower capability soil will be allowed to deliver a larger percentage of his production. As a consequence, quotas tend to cause a proportional shift, some would say a missallocation, of grain production from areas of higher rainfall and higher soil capability on the prairies to areas of lower soil capability which are more vulnerable to drought. A related effect is the shift in cropping patterns from grains to other specialty crops on high capability agricultural lands in order to compensate for low quota levels.

In like manner, constant quotas based strictly on area may thus be a deterrent to more advanced, highly efficient production techniques and may discourage increases in productivity on potentially highly productive land. For example, grain quotas may encourage the production of non-quota cereals, or even livestock, on high capability grain lands.

Constant quotas also may have regional impacts on soil degradation. Areas which have higher rainfall generally are those in which there is the greater potential for continuous cropping versus summerfallowing. Such regions generally enjoy higher yields, and consequently, the constant quota system reduces the proportion of the crop which can be sold there, in comparison with more marginal areas. The constant quota policy may therefore provide the least incentive to reduce summerfallow in the areas best able to do so. Research could focus on the means by which quota policy could be altered to encourage reduced summerfallowing, particularly in areas where moisture levels allow farmers to continuous crop.

The CWB has noted, however, that:

(1) land in summerfallow has been steadily declining, particularly in the areas of the Prairies receiving adequate rainfall.

(2) wheat yields have trended upwards, 1972-1984, reflecting at least in part, more

intensive farm management.

(3) low carryovers of grain production have not constituted substantial disincentives to seeding more land in grain and adopting more intensive production practices where possible.

(4) many farmers choose to diversify their operation into other crops and livestocks on their own accord in order to reduce their economic vulnerability to grain markets.

(5) contracting is done by the Board along with the quota system (i.e. for soft white spring wheat); these contracts recognize productivity differences between farms or areas.

(c) CWB policies influence producer's decisions and cropping patterns towards specialization in grain, particularly, wheat and barley. This occurs, through, for example, the relative emphasis placed on the export of the grains over which the Board has control and by granting "bonus acres" under the quota system. Such practices tend to increase the area in Board grains and reduce the production of "specialty crops," as well as the area held in summerfallow. The Wheat Board, however, has observed that the area seeded to specialty crops on the prairies is increasing, thus indicating that the "bonus acres" program has not reversed this trend. Overall, the Canadian Wheat Board has recently improved marketing efficiency of the six major grains, enabling producers in Western Canada to remain in business and, in many years, to expand and prosper.

FPLU IMPLICATIONS:

Further research is required concerning the effects of the Wheat Board quota system on producer decisions concerning the allocation and management of land (especially the effects on land degradation), pursuant to the policy statements and guidelines of the Federal Policy on Land Use.

MAGNITUDE:

Grain acquired by the Wheat Board:

	1982-83		1981-82	
	Tonnes	Amount ($)	Tonnes	Amount ($)
Wheat	22,585,503	3,770,206,277	18,658,871	3,276,358,005
Amber Durum Wheat	3,027,496	520,917,055	2,856,806	501,829,759
Oats	202,924	18,714,657	347,492	38,217,525
Designated Oats	30,792	4,225,541	67,230	9,216,771
Barley	4,988,519	548,587,321	5,788,819	720,107,523
Designated Barley	1,029,868	161,381,046	1,220,023	190,656,652
TOTAL	31,865,102	5,024,031,897	28,939,241	4,736,386,235

EI.1. Canadian Agricultural Employment Programs:
Federal-Provincial Agricultural Employment Agreements.
Canada Farm Labour Pools.
Foreign Seasonal Agricultural Worker Movements.

DESCRIPTION:

Canadian Agricultural Employment Programs are designed to:

(1) achieve the fullest use of Canadian labour resources in the agricultural industry.

(2) assist in the development and stabilization of an agricultural labour market.

(3) encourage improvements in wages, working and living conditions, and other benefits to farm workers.

Federal-Provincial Agricultural Employment Agreements provide a mechanism for federal-provincial consultation on policies and programs relating to the development and utilization of workers for the primary agricultural sector. They also provide a means whereby Canada and the participating provinces can share, on an equal basis, the cost of agricultural employment development measures. Funds are currently used:

(1) to subsidize the construction and renovation of on-farm housing accommodation for seasonal agricultural workers.

(2) for promotion and advertising.

(3) to provide daily transportation to and from the work site for seasonal agricultural workers.

(4) for labour market research.

(5) for administrative expenditures.

All provinces, except Alberta and Newfoundland, participate in this program. Present agreements are in effect up to 1986.

The Canada Farm Labour Pool (CFLP) system is designed to stabilize the agricultural labour market by organizing the supply and demand of Canadian workers for the farming industry and by encouraging improvements in the wage rates and employment conditions for Canadian farm workers. Canada Farm Labour Pools are operated by private contractors and provide a specialized employment referral service to farming communities. The pools help to cope with the problems associated with the uncertain supply of skilled farm workers, the seasonality of employment and the fluctuations in job opportunities due to local crop conditions, weather and seasonal fields.

Local agricultural employment advisory boards representing the local agricultural communities advise on the operation of each Pool, and establish guidelines for wage rates, working conditions, and accommodation for workers hired through the pools.

Foreign Seasonal Agricultural Worker Movements, often referred to as Offshore Worker Movements, are the result of a number of arrangements by Canada with several Commonwealth Caribbean countries and Mexico to supplement the Canadian work force with seasonal agricultural workers from these countries. They provide for the organized movement of foreign workers to meet the temporary needs of employers for specific periods when shortfalls arise in the Canadian supply of agricultural workers. Wage guarantees, housing standards, transportation costs, medical arrangements and working conditions are included in the agreement between the workers, the employer and the foreign government.

POTENTIAL LAND IMPACTS:

Canada Agricultural Employment Programs assist farm viability by ensuring a supply of skilled farm labour which guarantees a reasonable level of productivity to the farmer. By encouraging improvements in wages and living conditions, they also have the potential to attract additional labour to the industry and encourage the maintenance of a future supply of workers. Thus, these programs play a role in maintaining agricultural land in production, especially for labour-intensive fruit and vegetable production on high capability agricultural land.

Foreign agricultural workers provide producers with a supplementary source of agricultural workers, where there is an insufficient supply of Canadian workers. They are employed primarily in labour-intensive fruit, vegetable and tobacco production in peri-urban areas of Ontario.

The federal role in labour supply can have important land-use effects where significant farm labour shortages occur, especially at harvest time, and especially for perishable commodities such as fruits and vegetables which have to be picked quickly. Therefore, Agricultural Employment programs help increase efficiency in the agricultural sector at crucial periods in the crop season, and help maintain productivity. Finding adequate labour is a particularly important factor in survival of agricultural enterprises, especially if capital is not available to buy machinery that could substitute for this labour. Farm labour programs can play a role in lessening the loss of farmland in both peri-urban and marginal agricultural areas.

FPLU IMPLICATIONS:

Generally, these employment assistance programs contribute to maintaining high capability farmland in production. Therefore, they are supportive of the objectives of the Federal Policy on Land Use.

MAGNITUDE:

Federal contributions under Agricultural Employment agreements:	$1,012,000 (1985-86 est.) $ 615,000 (1984-85)
Federal contributions to Farm Labour Pools:	$5,994,000 (1985-86 est.) $5,951,000 (1984-85 est.)
Job vacancies filled by CFLPs:	$ 272,161 (1985-86 est.) $ 245,493 (1984-85 est.)
Job vacancies filled under Foreign Seasonal Agriculture Worker Movements:	$ 5,536 (1985) $ 5,029 (1984)

Energy Program Sector

EM.1. Petroleum Sources: Supply, Demand and Substitution

DESCRIPTION:

The Petroleum Sources Activity aims to ensure the orderly development of adequate and secure sources of petroleum to meet Canada's energy requirements. It carries out economic and technical assessments of:

(1) Canada's oil and gas resources and requirements.

(2) the conditions of their development.

(3) the component of foreign oil in meeting Canadian requirements.

(4) related transportation and processing systems pertaining to oil and gas supplies from all sources.

(5) the condition of oil and gas markets, domestic and foreign, and of factors affecting these markets.

These assessments are used to support the provision of information, analysis and advice on national and international petroleum activities and on Canada's oil supply from domestic and foreign sources. These are also employed in the development and implementation of policies and programs re: petroleum utilization and natural gas and liquids. As well, the Petroleum Sources Activity maintains an ongoing liaison with the National Energy Board on oil and gas regulation.

More specifically, the Petroleum Sources Activity is subdivided into four major sub-activities: Petroleum Resources; Oil Supply; Petroleum Utilization; and Natural Gas and Liquids. Some of the significant planned outputs in fiscal year 1984-85 for each sub-activity are described below:

(1) Petroleum Resources:
- identify supply prices for all major discoveries in Canada's frontiers.
- quantify productive potential of all major enhanced oil recovery projects established until the end of 1983.
- formulate domestic oil and gas supply scenarios on the basis of geological and engineering assessments.
- examine heavy oil upgrading programs.

(2) Oil Supply:
- coordinate and implement policies and programs on oil supply and pricing with the federal/provincial agencies and the petroleum industry.

(3) Petroleum Utilization:
- ensure efficient utilization of available Canadian oil resources and the supply of oil products to meet the needs of Canadian markets in terms of volume, quality and price.

- develop information analysis and policy advice aimed at optimizing the transportation, processing and marketing of oil resources in Canada.

(4) Natural Gas and Liquids:
- develop, implement, analyze and modify federal policies and programs governing the pricing and marketing of natural gas and gas liquids to ensure appropriate market expansion and an equitable distribution of revenues, including the on-going review of existing and potential market opportunities for the use of natural gas and liquids, both domestically and for export.

POTENTIAL LAND IMPACTS:

The Petroleum Sources Activity can both assist or put a damper on the petroleum industry by providing analysis, information, advice and price regulation re. oil and gas resources and prices. By participating in the management of petroleum supply and prices, the program can influence the level of exploration, extraction and transport of oil and gas. There may also be subsequent impacts (overheating, stability or recession) on resource communities and lands currently under agricultural, forestry, wildlife and other uses, which show potential for oil and gas exploration. Analyses and advice concerning the expansion and extension of oil and gas pipelines can have consequences for lands surrounding the route over which pipelines are planned for extension. The level of petroleum supply and prices, which the Petroleum Sources Activity has some potential to leverage, can have significant consequences for automobile travel, the form of urban land development and industrial land uses heavily dependent on petroleum, particularly if changes in petroleum supply and price are sudden and dramatic.

FPLU IMPLICATIONS:

Pursuant to the Federal Policy on Land Use, advice on petroleum supply and pricing should, in broad terms, consider the land-use consequences of exploration, extraction, pipeline development and urban land planning that would arise from dramatic changes or fluctuations in petroleum supply and pricing.

MAGNITUDE:

Sub-activity	1984-85 est.	1983-84 forecast
Petroleum Resources	$ 5,029,000	$ 2,263,000
Oil Supply	1,011,000	764,000
Petroleum Utilization	1,100,000	1,011,000
Natural Gas and Liquids	340,424,000	175,562,000
Activity Management and Support	595,000	661,000
TOTAL	$348,159,000	$180,261,000

NOTE: Of the total expenditures, 1% is for personnel costs, 1% is for operations and maintenance and the remaining 98% for contributions.

Energy Program Sector

EM.2. Non-Petroleum Sources: Supply, Demand and Substitution

DESCRIPTION:

The Non-Petroleum Sources activity aims to ensure the orderly development of adequate and secure sources of non-petroleum energy to meet Canada's energy requirements, including electricity, uranium and nuclear energy, coal, renewable energy and alternative non-petroleum liquid and gaseous fuels. It assesses Canada's non-petroleum energy sources and reserves and determines demands for these resources. It also carries out studies and develops programs related to resource exploitation, development, processing, transportation and transmission of non-petroleum energy sources. The substitution for scarce energy forms of those in more abundant supply is also promoted through studies of energy utilization.

The Non-Petroleum Source Program is responsible for the evaluation and recommendation of policies to enhance the contribution of electricity, and the administration of agreements relating to electricity supply and use. It also develops and coordinates policy on: uranium supply, exports of uranium and nuclear equipment, development of nuclear power and uranium industries in Canada and management of radioactive wastes. Its activities vis-à-vis coal involve:

(1) the optimization of production and use of coal and peat resources for both domestic and external markets.

(2) the identification and demonstration of technologies leading to the expanded and environmentally acceptable use of coal.

The program, as well, is responsible for the orderly development of alternative non-petroleum liquid and gaseous fuels to replace 5% of gasoline use by 1990. Finally, responsibilities include the development of renewable energy technologies, with the goal of providing 6.5% of national primary energy demand from renewable energy by 1990.

More specifically the Non-Petroleum Sources Activity is subdivided into five major sub-activities: Electrical Energy; Uranium and Nuclear Energy; Coal; Renewable Energy; and Transportation-Vehicle Fuels. Some of the significant outputs which were planned for fiscal year 1984-85 are described below under each sub-activity.

(1) Electrical Energy:
- coordinate and administer federal-provincial agreements relating to electricity supply and use (e.g. Nelson River Transmission, Annapolis Tidal Demonstration).

- analyze electricity markets, forecast future needs and encourage appropriate investments.
- encourage and support research, development and demonstration.
- improve opportunities for profitable international trade in electricity.

(2) Uranium and Nuclear Energy:
- implement Canada's uranium export policies.
- publish information and data on uranium resources and nuclear energy.
- develop a nuclear supply industry rationalization and research strategy.
- coordinate the federal approach to major nuclear projects (e.g. Lepreau 2).
- negotiate with the provinces and territories on the management of radioactive waste.

(3) Coal:
- analyze the coal market, both domestic and international.
- develop integrated strategies for the development of both coal and peat.
- demonstrate various coal processing technologies.
- study the feasibility of pipeline coal/water slurries.
- identify suitable coal liquefaction and coal benefication processes.
- administer various federal-provincial agreements and programs of financial assistance (e.g. Coal Utilization Program).

(4) Renewable Energy:
- prepare a policy and planning framework for the development of renewable energy.
- deliver and monitor renewable energy programs.
- provide program development and research in support of the Renewable Energy Conversion Assistance Program.

(5) Transportation -- Vehicle Fuels:
- assess the technical and economic aspects of alcohol fuels in Canadian transportation.

POTENTIAL LAND IMPACTS:

The Non-Petroleum Sources Activity impacts on land through its research, information, advice and subsidy programs re. electricity, nuclear energy, coal and peat, renewable energy and alternative liquid and gaseous fuels. It thus can impact on land through its potential to influence the exploration, development, processing, transportation and transmission of these substitute energy sources. As well, development of alternate and renewable energy sources has the potential to affect all energy users in the future, thus influencing land-use patterns based on high energy consumption. An overview of the types of land-use effects caused by the production of these various forms of energy is provided below.

The generation and transmission of electricity has varying land-use impacts. The previous land uses may be displaced or disrupted by the siting of large thermal generation plants near urban areas, as well as by the construction of dams and reservoirs, access roads and transmission corridors in agricultural and forested areas. Some uses may be beneficial to the environment (e.g. transmission corridors in urban areas may serve as linear parks and paths). But waste from thermal (coal-powered) electrical generation can lead to degradation and contamination of the land resource by acid rain.

Nuclear power generation can potentially cause serious land degradation due to contamination from uranium mine tailings and high-level or low-level radioactive wastes (see programs # EM.B

and EM.9 for further details). Buffer zones are established around nuclear power generation facilities in order to limit the potential dangers to various land uses, especially urban communities. Compared to other forms of electrical energy generation, nuclear power has smaller land requirements. Uranium mining and milling make up the largest land usage with about 1,000 ha in mill tailings. Most of the mine sites though are in remote locations, where alternative intensive land uses are very limited.

The generation of energy from coal and peat bring forth concerns regarding the pollution caused by burning these fuels. Increased energy generation from coal also could expand the level of coal mining with consequent effects on surrounding land uses. Coal mining can displace previous uses, disrupt surrounding environmentally sensitive areas and destroy the aesthetic quality of the landscape. Mine tailings can pollute the ground water and degrade the soil characteristics and surrounding vegetation. The increased mining of peat for use as a fuel may prove disruptive to wetlands.

The substitution of non-petroleum energy sources for petroleum energy can potentially reduce the adverse land-use effects arising from the exploration, production, transport and use of petroleum energy, to the extent that the substitution occurs. Some non-petroleum sources may have more significant land-resource impacts of their own, however (e.g. hydro-electric dams and consequent flooding).

FPLU IMPLICATIONS:

Financial incentives, subsidies and research undertaken through this program should consider the impact of the exploration, mining, transportation and production of the various forms of energy on the surrounding land use and resources. The impact of waste products generated by mining and subsequent production of energy should also be considered, pursuant to the Federal Policy on Land Use.

MAGNITUDE:

Activity:	1984-85 est.	1983-84 forecast
Electrical Energy	$ 36,410,000	$ 45,754,000
Uranium and Nuclear Energy	753,000	714,000
Coal	46,592,000	13,701,000
Renewable Energy	25,873,000	23,378,000
Transportation -- Vehicle Fuels	27,212,000	13,792,000
Activity Management and Support	2,663,000	2,653,000
	$139,503,000	$ 99,992,000

Note: Canadian Oil Substitution Program expenditures are not included since the program was terminated March 31, 1985.

Mineral Policy Sector

EM.3. Mineral Development: Analyses and Advice

DESCRIPTION:

The Mineral Development activity of the Mineral Policy Sector exercises a policy and advisory role with other governmental departments and the industry in domestic and international mineral supply and demand transactions. It assembles information on the activities and intentions of firms active in the minerals field and assesses the implications regarding the domestic supply of minerals and opportunities for Canadian firms in foreign markets. In cooperation with the provinces, the Sector studies mineral development opportunities in the various regions of Canada and analyzes problems related to the industry with a view so that it can advise interested parties on the state of the mineral industry and on preferred positions to take in the mineral market. Recommendations are provided with respect to appropriate fiscal, land-use and foreign policies. In summary, the Mineral Development activity presents initiatives designed to complement private sector and provincial government efforts aimed at capturing short- and long-term mineral development opportunities in Canada and abroad. By promoting, developing and coordinating national mineral policies and programs, it is designed to assist the minerals and metals sector in making a strong contribution to the Canadian economy.

POTENTIAL LAND IMPACTS:

The Mineral Development activity has the potential to affect land use through its support of Canada's mining industry which can have a broad array of land-use impacts. Through its information and advice, the program assists the mining industry in decision-making. By providing extensive information on mineral sources development opportunities in both domestic and foreign markets, the program can facilitate the exploitation of mineral resources on a wider scale and can affect external and interprovincial trade in minerals, with consequences for the level of mining activity and surrounding land use.

The mining industry can have a broad range of land-use effects -- some site specific, others region wide. Mining production may enhance the economic basis for other land uses, notably transportation and industrial activities, and may foster the development of communities and transportation networks, especially in remote and northern areas. Conversely, extraction activities may displace other land uses for which the land may be equally or better suited, i.e. agriculture, forestry, recreation or wildlife. Construction of facilities and subsequent operational activities for mineral exploration and extraction may damage environmentally sensitive areas and decrease the aesthetic value of the land over wide areas, if appropriate

planning and regulatory measures are not followed or enforced. As a result, advice affecting decisions on the level of mining activity can have a variety of indirect land-use consequences.

FPLU IMPLICATIONS:

Pursuant to the Policy, the full range of land-resource and environmental assessment criteria should be developed and built into the information and advice function provided by the program, particularly where specific siting and land management decisions are of concern.

MAGNITUDE:

Total activity expenditures: $7,907,000 (1984-85 est.)
$9,426,000 (1983-84 est.)

Mineral Policy Sector

EM.4. Federal-Provincial Mineral Development Subsidiary Agreements Under ERDAs

DESCRIPTION:

The new federal-provincial mineral development agreements are designed to establish a framework for joint planning and implementation of programs which have the objective of strengthening and diversifying the mineral industry sector of the provincial economy. Geoscience programs, mining and minerals technology research and development and economic development studies are emphasized.

Geoscience programs aim to provide new and more detailed information on the geological characteristics of selected land areas known or suspected to have a high potential for undiscovered mineral deposits, in order to encourage exploration and improve its probability of success. Geoscience activities and information include mineral deposit studies, geological and geophysical investigations, regional geochemical surveys, overburden studies, geological mapping and industrial mineral assessment.

The mining and minerals technology programs consist of research and development aimed at raising efficiency by improving existing operations and developing better techniques for mining and mineral processing operations. These technology programs seek to increase prospects for new developments of mineral deposits.

Economic development studies analyze opportunities for mineral development through selective commodity-oriented market and feasibility studies. For some provinces (i.e. Nova Scotia, New Brunswick and Manitoba), assistance is also available for specific mining firms to conduct marketing and productivity studies which identify opportunities for and constraints to mineral industry development.

As of September, 1984, five agreements were signed with Newfoundland, Nova Scotia, New Brunswick, Manitoba and Saskatchewan; an agreement with Ontario was under negotiation. These agreements provide a means for Canada and the participating provinces to share the cost of approved programs. Individual measures undertaken reflect the economic development opportunities for the mineral sector in each participating province. Agreements generally span five years.

POTENTIAL LAND IMPACTS:

The mining industry can have a broad range of land-use effects -- some site specific, others region wide. Mining production may enhance the economic basis for other land uses, notably transportation and industrial activities. It may also foster the development of communities and transportation networks, especially in remote and northern areas. Conversely, extraction activities may displace other land uses for which the land may be equally or better suited (i.e. agriculture, forestry, recreation or wildlife). Construction of facilities and subsequent operational activities for mineral exploration and extraction may damage environmentally sensitive areas and decrease the aesthetic value of the land over wide areas, where appropriate planning and regulatory measures are not followed or enforced. As a result, Mineral Development Agreements in support of mineral exploration, mining operations and new marketing opportunities can have a variety of land-use consequences.

The Mineral Development agreements have the potential to impact on land by providing assistance towards mineral, technology and economic studies in aid of more effective mineral explorations, more efficient mining operations and identification of new marketing and mining opportunities from an economic standpoint. Through the geological, technological and economic studies, the Agreements help to provide a basis for industry to be more efficient and targeted, focusing its exploration and production on sites where these activities are likely to be most productive and efficient. As a result, the agreements can help to enhance the mineral industry's potential, while limiting the areas explored and sites developed for given mineral products. This potential to focus exploration and production could serve to limit adverse environmental and land-resource effects to fewer sites and lay the groundwork for fewer, but possibly more productive and stable mining communities. Along with many other economic and institutional factors, the Mineral Development agreements may provide a stimulus to increased employment and thus increased business and community development, to the extent that Canada's mining industry remains competitive worldwide.

FPLU IMPLICATIONS:

The impacts of the program on the land may thus be positive or negative, depending on how mining operations and developments are managed. There is a need in the economic studies to consider the land resource and other environmental factors to minimize land degradation and ensure that rehabilitation occurs. Also included in these studies should be concern for the handling of tailings and waste products that can pollute and contaminate the surrounding land resource as well as the vegetation, wildlife and water regime.

The Mineral Development subsidiary-agreements should comply explicitly with the guidelines of the Federal Policy on Land Use through provisions to this effect in the agreements. More specifically, a full range of land-resource and environmental assessment criteria should be developed and incorporated into the review process for individual projects and studies to ensure compliance with the policy statements and guidelines of the FPLU.

MAGNITUDE:

Signed Agreements (May, 1986)	Federal Share	Provincial Share	TOTAL
Canada-Newfoundland	$ 15,400,000	$ 6,600,000	$ 22,000,000
Canada-NS	$ 16,125,000	$ 10,820,000	$ 26,945,000
Canada-NB	$ 15,000,000	$ 7,307,000	$ 22,307,000
Canada-Québec	$ 50,000,000	$ 50,000,000	$100,000,000
Canada-Ontario	$ 15,000,000	$ 15,000,000	$ 30,000,000
Canada-Manitoba	$ 14,800,000	$ 9,900,000	$ 24,700,000
Canada-Saskatchewan	$ 3,190,000	$ 3,190,000	$ 6,380,000
Canada-British Columbia	$ 5,000,000	$ 5,000,000	$ 10,000,000
Canada-Yukon	$ 3,501,000	$ 389,000	$ 3,890,000
TOTAL (Five years)	$138,016,000	$108,206,000	$246,222,000

ENERGY, MINES AND RESOURCES

Earth Sciences Sector

EM.5. Surveys and Mapping

DESCRIPTION:

The Surveying and Mapping activity represents the principal presence of the Federal Government on matters relating to national surveying and mapping. It is responsible for:

(1) the establishment and maintenance of a national network of accurately located horizontal and vertical control points.

(2) the acquisition and maintenance of topographical and geographical information on the Canadian landmass.

(3) the preparation, publication and distribution of topographical and electoral maps, aeronautical charts and publications, aerial photographs, gazetteers and the National Atlas of Canada.

(4) the regulation and management of property surveys and the maintenance of cadastral frameworks for Canada Lands, including those in the offshore.

(5) the maintenance of international boundary markers.

It thus furnishes geodetic, topographic and selected geographic information such as is presented in the National Atlas (i.e. temperature and precipitation data, natural resources data, etc.), which may be required for effective resource management, land use and demarcation, engineering works, urban development, transportation, defence and public safety.

POTENTIAL LAND IMPACTS:

The maps, charts and surveys produced provide necessary reference material which can be used in support of natural resource exploration and development, hydro-electric and transportation development and property rights on Canada Lands. They also provide a measure of support to virtually all the terrain or geographically based planning, administration and research done in Canada. For example, geodetic surveys information is essential to many engineering and geoscience projects, environmental studies and national mapping. Topographic maps are important in themselves for resource exploration and planning, but are equally useful in providing the graphic bases for a wide variety of thematic maps such as geology, soils and forestry maps which are produced by governments, private firms and universities. These topographic and other thematic maps serve as an information base for various types of land use and resource analyses performed by public and private agencies. Some may also be used for tourism (hiking, canoeing, orienteering) in parks and wilderness areas. Therefore, the Surveying and Mapping activity

provides the basic underpinning to a number of economic activities which have a variety of land-use impacts.

FPLU IMPLICATIONS:

This is a fundamental land inventory program which provides basic information needed for sound resource decision-making. It is important for the program to ensure that its products are widely available in a form that is most useful to a broad array of clients.

MAGNITUDE:

Total activity expenditures: $51,120,000 (1984-85 est.)
$50,454,000 (1983-84)

ENERGY, MINES AND RESOURCES

Earth Sciences Sector

EM.6. Geological Surveys

DESCRIPTION:

The Geological Surveys activity is designed to provide comprehensive knowledge, technology and expertise pertaining to the geology of the Canadian landmass and offshore areas, including geological aspects of mineral resources and non-renewable energy resources, and geological conditions affecting land and seabed use. It is responsible for:

(1) the conduct of geological, geophysical and geochemical research and surveys.

(2) the identification and evaluation of non-renewable energy sources (oil, gas, coal and uranium) and mineral resources, and the provision of estimates of their quality, quantity and distribution.

(3) the investigation of natural geological hazards and features and geomorphic processes affecting engineering works, and environmental and ecological equilibrium.

(4) the development of geophysical and other technologies.

(5) the provision of scientific advice to government to facilitate formulation of policies.

(6) the production and dissemination of maps and reports.

It thus furnishes scientific data about the earth's crust necessary for the efficient development, use and conservation of the country's natural resources.

POTENTIAL LAND IMPACTS:

A comprehensive, integrated geoscience knowledge base, encompassing the whole of the Canadian landmass, onshore and offshore, is an essential prerequisite for exploration, development and management of mineral and fossil fuel resources. By providing this necessary information, the Geological Surveys activity assists regional development planning, land-use planning, construction engineering and environmental management which invariably lead to a wide range of land-use activities. For instance, it identifies and assesses geological phenomena that may constrain land use, particularly in association with resource exploration, development and utilization. This may include for example the effects of permafrost on petroleum development and transportation and pipeline routing, seismic risks in areas of development and landslide-prone areas. It may thus promote more efficient land-use evaluation in regard to the economic and socio-environmental aspects of resource development.

The information provided by the Geological Surveys activity may serve as the basis for more informed decisions by the mining industry. Bedrock studies enable an assessment of mineral resource potential, and guide mineral exploration which serves as the first step in mineral resource development. Technological research and its subsequent application may assist with improvements to exploration, extraction and land-reclamation techniques. Thus, the Geological Surveys activity facilitates the exploitation of mineral and energy resources through the provision of extensive information on mineral and energy sources, and on methods of exploiting these resources.

Information provided by the Geological Surveys activity may also result in more informed decisions regarding mineral and energy policy for regulatory agencies at both the federal and provincial level.

The roles of the Geological Surveys include:

(1) provision of fundamental information on the resource base of Canada which can be applied by other public and private decision-makers to facilitate the formulation of mineral and energy policy.

(2) assistance in resource exploration and exploitation, to identify geological processes that might affect the environmental balance.

FPLU IMPLICATIONS:

It is important for the program to ensure that its information products are widely available in a form that is useful to a broad range of clients. It is the responsibility of other agencies to ensure that this information is applied effectively to support good land-resource decision-making.

MAGNITUDE:

Total activity expenditures: $59,755,000 (1984-85 est.)
$51,236,000 (1983-84)

ENERGY, MINES AND RESOURCES

Research and Technology Sector

EM.7. Remote Sensing

DESCRIPTION:

The Remote Sensing activity is designed to improve remote sensing technology, and to facilitate the acquisition, analysis and dissemination of remotely sensed data obtained by aircraft and satellite. This contributes to the development of effective resource management and information systems relating to Canada's terrain and oceans. Tasks performed include:

(1) the reception, archiving and dissemination of data from remote sensing satellites.

(2) the development of the full range of satellite and airborne remote sensing technology from sensor to image analysis systems.

(3) the transfer of resulting technology to Canadian industry.

(4) the support of technology and applications of R&D by industry, universities and other government agencies.

(5) the provision of technical and professional assistance to operational users of remote sensing for resource management and environmental monitoring.

POTENTIAL LAND IMPACTS:

Remote sensing data and its derived information are necessary tools to aid in the management of Canadian natural resources and the monitoring of land-use activities. In agriculture, for example, it may assist in marketing, supply management, pricing, stabilization, etc. by providing valuable and necessary information such as crop estimates, or acreage planted, thus facilitating efficient land use. In forestry, it can provide the basis for inventories which in turn assists the decision-makers regarding cutting supply and restocking. It also helps in monitoring the evolution and extent of forest infestations, such as the spruce budworm, which may have serious implications vis-à-vis the forest industry. Remote sensing data is also necessary for land-cover mapping which provides the basis for evaluating land potential for conservation and recreation planning (e.g. wetlands). Other applications include geology, oceanography, engineering, water-resource management, ice reconnaissance and environmental monitoring. The outputs of the Remote Sensing activity therefore provide the basis for a variety of studies (e.g. studies of wildlife habitat, mineral exploration reconnaissance projects, agricultural surveys, etc.). These are needed to assess the potentials for national and regional economic development and environmental protection, with subsequent effects on land-use activities.

FPLU IMPLICATIONS:

This is a fundamental land-inventory program which provides basic information for sound decision-making concerning the land resource. It is important for the program to ensure that its products are widely available in a form that is most useful to a broad array of clients. It is the mandate of a wide variety of other programs to ensure that this information is applied effectively to support well informed decision-making regarding the land resource.

MAGNITUDE:

Total activity expenditures: $25,623,000 (1984-85 est.)
$28,989,000 (1983-84 est.)

Related Agency that Reports Through the Minister of Energy, Mines and Resources

EM.8. Atomic Energy Control Board

DESCRIPTION:

The Atomic Energy Control Board (AECB), through its Atomic Energy Control Program, provides for the control of the development, application and use of atomic energy in Canada, and participates on behalf of Canada in international measures of control. The AECB is primarily a regulatory body, which achieves its control through a comprehensive licencing system that covers all aspects of the use, import and export of nuclear facilities, prescribed substances and equipment (i.e. mining, refining, production, processing, transport, possession, ownership, use, sale or disposal) to assure proper consideration of health, safety and security. The licensing system is administered with the cooperation of other federal and provincial government departments in such areas as health, the environment, transport and labour.

In order to exercise its regulatory role, the AECB defines standards that must be met, assesses potential licencees' capabilities to meet and maintain them and, once a licence is issued, carries out compliance inspections to ensure that its requirements are met at all times. The Board also conducts mission-oriented research and development to obtain data essential for the effective implementation of licencing and compliance activities.

The Atomic Energy Control Regulations relate to health, safety and security. Environmental aspects are involved mainly through consideration of the environment as a pathway between a source of radioactive material and human receptors who may be exposed to radiological risks. Land-use impacts are, therefore, considered incidentally.

POTENTIAL LAND IMPACTS:

The AECB has regulatory and licensing powers governing most aspects of the nuclear fuel cycle including:

(1) uranium exploration, mining, milling and waste management operations.

(2) determination of need and the siting of nuclear power generation facilities.

(3) regulation of lands surrounding nuclear power facilities.

(4) the temporary and permanent storage of low-level and high-level radioactive wastes.

The land-use effects of the nuclear fuel cycle, which are outlined below, are not directly caused by the AECB itself, but rather by the industry it regulates. The AECB has many

authorities as defined in the Act. Yet it has, except in its siting policies, very few regulatory powers in place which might affect the land resource and its use.

Uranium extraction activities may displace for the foreseeable future a minor amount of other possible land uses such as agriculture, forestry, recreation or wildlife on the site. However, the major land-use impact resulting from mining and ore processing pertains to the disposal of radioactive waste in the form of rock tailings in temporary storage facilities. There are currently 795 ha of uranium mill tailings in Canada, mainly in remote areas. Radioactive wastes occupy relatively moderate-sized sites which may be suited for other uses. They permanently preclude the land from some uses requiring permanent structures because of the long-lived radioactivity associated with the tailings (i.e. half-life of 100,000 years for some elements). Improper storage of radioactive wastes can pollute groundwater and result in contamination of the soil over a wider area, thus removing land from productive uses such as farming and forestry. Improper disposal of waste from uranium mining activities can also damage environmentally-sensitive areas and decrease the aesthetic value of an area through the visual impact of large volumes of rock tailings. By licensing uranium mining, milling and waste management operations, the AECB has a role to play in regulating and mitigating the land impacts generated by mining. The AECB controls uranium exploration only when there are potential health effects, i.e. underground exploration. The AECB regulates the export of uranium to ensure that government policies regarding nuclear non-proliferation and commercial terms are followed. These policies, therefore, have an effect on the level of mining activity, and hence on the surrounding land use. In particular, AECB development of close-out criteria for uranium tailings management facilities are designed to limit health and environmental risks.

The AECB regulations may, in a few cases, have direct impacts on the land uses around a nuclear site through concern with the health and safety aspects of nuclear energy. Through approval of the construction of nuclear facilities, the AECB can affect facility location and this can, depending on the type of facility, result in the location of nuclear facilities away from communities, high capability resource lands and hazard lands such as floodplains and unstable geologic features. AECB regulations place few direct restrictions on land use. The major exception is the zone of exclusion policy associated with heavy water production plants, such as the Bruce Nuclear Power Development facility in Ontario. This "buffer" zone involves an area of land with a radius of up to eight kilometers, where activities attracting large numbers of people are restricted. This buffer zone may result in the relocation of an existing land use such as a recreational park, or may restrict land use to those activities which do not attract large numbers of people, such as agricultural uses. Limited buffer zones with significant security precautions are also required around nuclear power plants.

Nuclear wastes are difficult to dispose of: the temporary storage of certain long-lived radioactive wastes (no permanent disposal area yet exists) would restrict the use of the site and may limit the marketability of nearby land. The greatest land-use impact of nuclear power generation would of course occur in the very unlikely, but possible, event of a serious reactor

accident. The latter would result in contamination of large areas of land and the surrounding population. AECB regulations are designed to minimize the risk of such an event occurring.

FPLU IMPLICATIONS:

Pursuant to the Policy, the AECB should be encouraged to further develop its regulatory powers as defined under the Act to control the use and management of sites and surrounding land uses potentially affected by any stage of the nuclear fuel cycle.

MAGNITUDE:

Program expenditures and contributions (control regulations and international measures for control):	$23,661,000 (1985-86 est.) $20,167,000 (1984-85 est.)

Related Agency that Reports Through the Minister of Energy, Mines and Resources

EM.9. Atomic Energy of Canada Limited (includes Canada-Ontario Irradiated Fuel Waste Management Agreement)

DESCRIPTION:

Atomic Energy of Canada Limited (AECL) was established to develop the utilization of atomic energy for peaceful purposes. Through research and development programs in the nuclear and allied fields, it attempts to secure for Canada a safe, reliable, long-term energy supply. It is responsible for the development of nuclear power reactors, fuel cycles and systems, safeguard systems and heavy water production processes. AECL also has responsibility for the technology and design of the safe disposal of some of the wastes generated by a nuclear power program. It is not responsible for mining and tailings from mining operations. Also, AECL participates in the development of a viable Canadian nuclear industry through the development and marketing of nuclear power systems, components, materials, equipment, technology and related by-products. Its operations therefore provide the multi-disciplinary technology base underlying the Canadian atomic energy program.

The Canada-Ontario Irradiated Fuel Waste Management Agreement is designed to provide an agreed basis for the development of storage, transportation, immobilization and disposal technology for irradiated nuclear fuel wastes. A ten year generic R and D program to demonstrate the safety of a disposal concept by March, 1991 has been agreed upon. Under this program, AECL and Ontario Hydro are developing storage and transportation methods, and AECL will develop immobilization and disposal methods. The process will be completed when the federal and Ontario governments accept the feasibility of the disposal concept.

POTENTIAL LAND IMPACTS:

By handling the research, development, marketing and promotion of Canadian nuclear technology, AECL facilitates the production of nuclear energy and thus indirectly contributes to the land impacts generated by the development, application and use of atomic energy. Even so, all operating nuclear power reactors, except the original demonstration unit at Rolphton, are owned by provincial utilities and uranium mines by other corporations. Impacts on the land resource, its use and market value, can potentially occur at various stages of the nuclear fuel cycle, including uranium mining, the siting and operation of nuclear power generating facilities and the transportation storage and disposal of low-level and high-level radioactive wastes.

High-level radioactive wastes generated by the operation of nuclear reactors (e.g. spent reactor

fuel) contain materials that are potentially hazardous to human health and the environment. Therefore, areas occupied by nuclear generators and used for temporary waste storage are restricted from residential, agricultural, recreational and other uses. This precludes use of relatively small areas of potentially high capability land (e.g. the Pickering site in Ontario is located on Class 1 agriculture and Class 1 forest land). There is also a very small risk that the land resource itself may be affected by radiation, often restricting its safe use for other activities for a considerable time.

AECL research and development activities, and activities spawned by related industries also generate low-level radioactive wastes, composed primarily of articles that come in contact with radioactive material during the operation and maintenance of a reactor (e.g. filters, clothing, etc.). The disposal of low-level wastes directly utilizes land. Some low-level wastes may be disposed in a shallow rock cavity; other wastes may be stored within the exclusion areas around generating stations. An estimated 19 ha will be required by the year 2000 for such low-level radioactive waste disposal. More significant than the limited area of land directly occupied is the potential for low-level wastes to impact significantly the groundwater regime due to the leaching of radioactive elements, thus affecting wider areas of land used for settlement and renewable resource production.

Changes in land value around nuclear facilities may also result due to public perception, whether real or exaggerated, of the nature of problems with nuclear generation and radioactive wastes. However, the largest direct impact on land in the nuclear fuel cycle results from mining (see AECB, program # EM.8) rather than power generation. Uranium mine tailings need hundreds of hectares of land, including the land directly utilized for waste storage as well as land used as a "buffer" zone.

Nuclear power generation facilities replace other means of electrical generation with potentially significant land-use impacts. Coal-fired stations, for example, may require strip-mining and produce acidic precipitation; hydro stations may require flooding and often use long transmission lines with frequent environmental effects.

Atomic Energy of Canada Limited, through its R and D programs, provides the technical information (e.g. reactor physics, chemistry and metallurgy, biological impacts of radiation, reactor operations and safety and treatment and handling of nuclear waste) neccessary for the operators to prepare applications and for the regulatory body to judge the applications. More fundamentally, the same research programs enable the designers and operators to provide safe and environmentally benign plants. In the case of nuclear wastes, AECL programs are expected to demonstrate beyond reasonable doubt that the environmental risks are acceptably low. Examples of AECL research include the development of alternative production processes and new methods to immobilize, temporarily store, transport and dispose of radioactive wastes. Research into underground disposal facilities is being actively pursued as the evident need for permanent disposal sites for nuclear wastes increases. "The proposed underground disposal sites would

have most of their effects below ground, but little lasting impact on the surface itself" (Redmond et al., 1983, p. 24). No permanent disposal site, however, has yet been selected due to difficulties in locating an appropriate site incorporating stringent specifications regarding geology and seismic stability, as well as public acceptance.

FPLU IMPLICATIONS:

Through its research and development activities, the AECL should be encouraged to continue to avoid or mitigate the land use and environmental effects of nuclear operations, and thus to fully implement the FPLU.

MAGNITUDE:

AECL energy-related R and D expenditures (operations and capital):	$226.2 million (1984-85 est.) $214.3 million (1983-84 est.)

ENERGY, MINES AND RESOURCES

Agency that Reports Through the Minister of Energy, Mines and Resources

National Energy Board

EM.10. Pipelines and Powerlines: Research and Regulation

DESCRIPTION:

The National Energy Board serves as a regulatory body responsible for overseeing pipelines and powerlines to ensure that a high level of public safety is maintained, and that adequate measures are taken to protect surrounding settlements and the natural environment during the site selection, construction and operational phases. The Board provides financial analysis of pipeline companies, as well as engineering analysis of pipeline and powerline construction proposals. One of its major responsibilities involves granting certificates of public convenience and necessity for the construction and operation of international electric powerlines and certain interprovincial lines, and for the construction and operation of international and interprovincial pipelines carrying oil, natural gas or petroleum products.

At the planning stage, the Board ensures that the applicant takes into consideration the environmental impact of the construction and operation of oil or gas pipelines and international powerlines. It considers such concerns as impact on permafrost, soil erosion and siltation at water crossings, impact on wildlife and fish, preservation of archeological sites, air emissions, noise and protection of agricultural soils. The Board also requires that the applicant describe the impact prevention, mitigation and restoration techniques that will be used on the project to prevent or adequately ameliorate those impacts.

Before a certificate is granted, the Board assesses the application at a public hearing. Within that process, the Board ensures that environmental and land-use concerns, among others, are thoroughly addressed, and their protection assured. The Board reviews the application for the general routing alignment and land use during the certificate stage. It considers the detailed land-use issues and individual landowner concerns at a second-stage review. Where a certificate is issued, and construction is undertaken, the Board conducts surveillance of all field activities to ensure that environmental and land-use protection is implemented. Construction practices are audited to ensure appropriate standards are met for public safety. Following construction, the Board continues to monitor the engineering, environmental and land-use aspects of the project to ensure that all lands are adequately rehabilitated and maintained.

The Board also issues guidelines for the preparation of regional socio-economic impact assessments of gas or oil pipeline construction projects. In assessing the types of impacts that would be generated by a proposal, the Board requires the applicant to promote positive and

mitigate negative regional socio-economic impacts of the project. Socio-economic post-construction monitoring is often required to review the success of the socio-economic programs put in place during construction.

POTENTIAL LAND IMPACTS:

Energy-transmission corridors have a variety of potential land-use impacts during the site selection, construction and operational phases. Electrical transmission corridors can have a locally disruptive influence on land use (e.g. the operation of a farm) and can limit the scenic value of adjacent lands for recreational and residential purposes. The development of transmission corridors can also cause degradation of the physical environment through the clear cutting of woodlands, the spraying of defoliants, the drainage of wetlands, the disruption of streamflow and the like. Special problems may occur in northern areas due to the presence of permafrost, such as problems of frost heave and thaw settlement. To ensure the integrity of transmission facilities, construction and other activities on energy corridors are strictly controlled. In urban areas, therefore, certain developments can be substantially restricted. Nevertheless, transmission corridors can often be used for wildlife habitat or for recreational purposes, such as walking paths, bicycle trails and allotment gardens, as well as for some commercial purposes. Public safety is a major concern with pipelines and powerlines, particularly in urban areas. Special precautions are taken, however, in their design, construction and operation to minimize any risks to public safety.

The Board's review of project applications and regulations concerning construction and operation assure that such impacts are minimized and controlled to acceptable levels. Only necessary right-of-way widths are permitted; the disruption of water-courses, wetlands or drainage systems are not permitted. Where special problems occur, such as with permafrost zones in northern areas, special techniques are devised and utilized to allow construction without permanent damage to the land or environment.

By considering both environmental and socio-economic impacts of proposed construction projects before issuing a certificate, the National Energy Board may help to ensure that the project will not conflict with an existing land use, and that any adverse effects will be mitigated. Also, by reviewing the location of pipelines and powerlines, the Board has the mandate to route them away from urban settlements, high capability agricultural land, environmentally sensitive areas, or hazard lands. If routing were not carefully assessed, the construction of facilities and subsequent operational activities for pipelines and powerlines could permanently disrupt environmentally sensitive areas including wetlands and sensitive areas of the northern tundra. When routing alignments cannot completely avoid such areas, specific activities and techniques are used to protect, restore and maintain them.

FPLU IMPLICATIONS:

The National Energy Board should be encouraged to continue to incorporate specific land-resource and environmental criteria into the review and certification process for pipelines and powerlines in accordance with the FPLU, as new technologies and construction techniques develop.

MAGNITUDE:

Total Energy Regulation and Advice expenditures	$24,043,000 (1984-85)
(includes program # EM.11):	$22,719,000 (1983-84)

Agency that Reports Through the Minister of Energy, Mines and Resources

National Energy Board

EM.11. Advice and Regulation on the Control, Conservation, Marketing, Export and Use of Oil, Gas and Electricity

DESCRIPTION:

The National Energy Board acts as a regulatory body in issuing licences or orders for (1) the export and the import of gas and (2) the export of oil (light crude contracts of greater than one year; and heavy crude contracts of more than two years) and electrical power. It serves as a source of advice to the government on the control, supervision, conservation, use, marketing and development of energy and sources of energy. In addition, it undertakes periodic studies of various energy issues both on its own initiative and at the request of the responsible Minister. It also is required to provide advice on oil, gas and electricity, based on on-going market assessments.

Prior to authorizing export licences the Board must, through public hearing as well as research and analysis, satisfy itself that the quantities of energy to be exported over the period of the licence do not exceed the surplus remaining after allowance has been made for reasonably foreseeable Canadian requirements. The Board may also, without a public hearing, permit the export of oil, gas and electricity for short periods and/or restricted volumes. The Board must satisfy itself that the price of natural gas and electricity to be exported meets conditions determined by legislation and regulations.

In circumstances of energy shortage, the Board can be given the authority by the Governor-in-Council to control movements of oil or gas between provinces and thereby cause the allocation of supplies.

POTENTIAL LAND IMPACTS:

The National Energy Board affects the volume of fossil fuels recovered, transported, refined and marketed across Canada through regulating and licensing exports and imports as well as advising the government on the development and use of energy resources. The decisions of the Board affect the level of activity in the fossil fuel industry, and the area of land explored, mined, and used for supporting activities such as transportation.

The nature and magnitude of land-use impacts by the industry itself is affected by its level of activity, technology and regulation by different levels of government. These impacts may include disruptive effects on immediately surrounding land uses such as agriculture, recreation and wildlife, especially during the exploration, drilling and construction phases. Such disruptive impacts, however, would be felt less severely during the pumping and transmission phases. The most significant site effects would result from the strip mining and refining involved in heavy oil production, which thus far occurs at only a few locations. Broader land-use impacts resulting from overall expansion of the fossil fuel industry would also occur, through job creation and the consequent development of housing and expansion of urban areas.

FPLU IMPLICATIONS:

The National Energy Board should be urged to include criteria regarding land-resource effects into its decisions concerning the type, source and volume of fuels to be licensed for export in accordance with the Policy.

MAGNITUDE:

Total Energy Regulation and Advice Expenditures	$24,043,000 (1984-85)
(includes program # EM.10):	$22,719,000 (1983-84)

Conservation and Protection

EN.1. Canadian Wildlife Service: Habitat Conservation Program

DESCRIPTION:

Under this program, the Canadian Wildlife Service is responsible for the management of 39 national wildlife areas (approximately 26,000 hectares in total) established by Order-in-Council. These areas have been set up and are managed for the protection of significant populations of migratory birds and threatened and endangered species. Most of them encompass wetlands. (In November 1984, the Minister withdrew funding for future acquisition of lands to be set aside as national wildlife areas.) North of 60D N, 13 migratory bird sanctuaries, encompassing 11,079,000 hectares, have been established by Order-in-Council. Exploration and development on these sanctuaries is allowed only under permit.

On the Prairies, waterfowl depredation of cereal grain crops is a problem. In response, lure crops and bait stations have been established on many national wildlife areas to attract depredating birds away from adjacent farm fields under federal-provincial Crop Damage Prevention Agreements (five years). Claims for crops depradated by waterfowl may still be made under the Crop Damage Compensation Program, part of Crop Insurance (program # AG.3).

The Habitat Conservation program also includes:

(1) wetland mapping and monitoring for use in land-use planning.

(2) the continued identification and description of major sites in the North for use in the northern land-use-planning process.

(3) the exercise of Environment Canada's horizontal powers to improve the management of federal lands for multiple use, including benefits to wildlife.

POTENTIAL LAND IMPACTS:

The establishment of national wildlife areas and northern migratory bird sanctuaries directly influences the use and management of land. Because of the relative small area and remote location of the lands involved, however, the overall impact on national land resources is small. Although the main purpose in establishing these areas is the protection and maintenance of significant populations of migratory birds and threatened and endangered species, there are ancillary benefits. The maintenance of these areas provides recreational opportunities for naturalists, hunters, photographers, artists and canoeists. The conservation and management of wetlands in wildlife areas protect spawning and nursery areas for many species of fish and habitat for other wildlife. These wetlands may also serve to attenuate flood peaks and storm flows, buffer shorelines against erosion and ameliorate water quality. Northern migratory bird

sanctuaries protect from inappropriate development critical habitat for the migrating waterfowl populations of North America. Lure crops and bait stations on national wildlife areas aid in limiting land-use conflicts between farmers and the wildlife areas and thus in maintaining both critical habitat and crop production.

Identification, mapping and description of wetlands can serve to pinpoint those which are most worthy of protection and conservation. Rural municipalities, wildlife and resource planning organizations and agencies and land users can use this information in developing conservation strategies, undertaking land-use plans and reviewing development intitiatives. For example, the review of proposals for agricultural drainage or irrigation could benefit from comprehensive wetland mapping and descriptions. Further, this baseline data can be used to assess the trends in wetlands in particular regions in the future, as well as to evaluate the success of wetland conservation efforts.

FPLU IMPLICATIONS:

There is potential for management of federal lands for multiple uses (e.g. wildlife habitat -- suitable for a variety of species). The Community Pastures (program # AG.10) in Manitoba and Saskatchewan, for one, might be managed to maintain a larger range of wildlife and plant species, as well as greater numbers thereof.

MAGNITUDE:

Habitat Conservation Program: $935,000 (1985-86 est.)

Conservation and Protection

EN.2. Flood Control and Flood Damage Reduction Programs (Federal-Provincial Agreements)

DESCRIPTION:

Environment Canada and its predecessors have been involved in flood damage reduction since the early 1950s, initially by assisting the provinces financially with flood control structures. Despite such efforts, over the following two decades, damages and federal financial assistance payments continued to increase. A shift in emphasis was required.

Since 1975, the federal government, in cooperation with provincial governments across Canada, has been implementing the Flood Damage Reduction (FDR) Program, which is designed to attack the causes of escalating flood damages by limiting new development on the floodplain. Floodproofed development may be feasible where there is a flood fringe, but no development is encouraged in the high-risk floodway. Over the long run, this approach should reduce flood damages, while encouraging more appropriate use of floodplain lands.

The FDR Program calls for the mapping and publicizing of areas subject to flood risks; federal-provincial agreements define the program as well as the policies controlling government expenditures in such areas. At a mutually agreed time, the area is designated, and indicated on a map using the highest flood contour expected to occur within a one-hundred year period. All provinces and territories have signed agreements, except for Prince Edward Island (which is not subject to inland flooding) and British Columbia, Alberta and the Yukon, which are currently in negotiation. As of March 31, 1986, there were 57 flood risk designations across Canada, affecting about 6.9 million people in 319 communities, including large urban centres such as Montreal, Toronto, Winnipeg and Fredericton.

In flood damage reduction agreements, the two levels of government define policies restricting government undertakings and programs in designated flood risk areas. For example, they will neither build nor assist others to build flood-vulnerable structures in such areas. This would include restriction of CMHC mortgages and incentives under the Department of Regional Industrial Expansion. Also, following flood-risk designation provided by the mapping program, neither the federal nor provincial governments will support or give flood disaster assistance to any new flood-vulnerable developments in the designated areas. Where development has taken place in a flood risk area prior to designation, other means of reducing the flood hazard may be considered. These might include acquisition of property or easements, flood proofing, land-use planning, flood forecasting and warning and structural controls (i.e. dams, dykes), as provided for in the agreements. As well, zoning by municipal governments on the basis of flood risk is encouraged.

Policies are outlined in the general agreements. Mapping agreements provide for the mapping and designating of areas to which the policies apply and studies agreements provide for studying existing flood problems. Recommendations from these studies can be carried out under Implementation Agreements. Joint steering and technical committees carry out the appropriate measures and maintain coordination between the agencies involved. Costs of the FDR Program are shared equally by Canada and the provinces, except for implementation agreements, under which the province pays a larger share, but recovers some money from the benefitting municipality.

POTENTIAL LAND IMPACTS:

By bringing into effect policies aimed at discouraging future flood vulnerable developments in designated flood risk areas, the FDR Program helps, over the long run, to promote the wise use of floodplain lands and reduce flood damage. It can also have a direct impact on land use through public acquisition of lands, setback requirements and the use of land for flood control projects such as dams.

By restricting government financial support and undertakings to reduce flood risks (i.e. avoiding floodplains), the FDR Program indirectly controls the use of designated land and the management of the intensity and diversity of activities and facilities on this land. Flood risk maps, which form the basis of the program, serve as an important tool for land-use planners and can influence land-use designations within the floodplain area. Maps can be used as a basis for zoning land use compatible with the flood hazard. Open space and recreation are typical compatible uses; others include some types of agriculture, public parking lots or use as a wildlife habitat.

Designated floodplains may, however, raise concerns about getting mortgages and insurance for existing developments on the floodplain. Designation may also affect values of existing properties or developments on the floodplain. In addition, some groups consider the 100-year flood-line to be an overbounding of the potential flood risk and thus restrictive to development. Studies have shown, however, that these concerns are either unfounded or are minor and are not attributable to this program alone.

FPLU IMPLICATIONS:

The mapping, designations and restrictions on federal undertakings through this program provide a significant tool for planning and managing floodplain areas. There is a need to monitor the degree to which municipalities officially adopt the floodplain designation under their planning and zoning processes.

MAGNITUDE:

Federal-Provincial Flood Damage Reduction Agreements

April, 1986

Provinces and Agreements	Duration (years)	Total Cost* ($)	Locations of Application	Expiry Date
NEWFOUNDLAND				
General Agreement	12	---	N/A	1993
Flood Risk Mapping Agreement	7	1,470,000	11	1988
Studies Agreement	5	480,000	3	1988
NEW BRUNSWICK				
General Agreement	15	---	N/A	1991
Flood Risk Mapping Agreement	10	2,000,000	10	1986
Studies Agreement	10	200,000	3	1986
Saint John River Basin	10	1,400,000	N/A	1987
Marsh Creek Watershed	6.5	2,010,000(a)*	N/A	1984
Petitcodiac Sea Dykes Agreement	0.25	160,000	N/A	1979
NOVA SCOTIA				
General Agreement	15	---	N/A	1994
Flood Risk Mapping Agreement	10	1,030,000	5	1989
Studies Agreement	10	670,000	2	1989
QUEBEC				
Combined General and Flood Risk Mapping Agreement	16 (mapping 11)	5,000,000	375	1992 1987
Dykes and Flow Regulation Works -- Montreal Region	7.5	16,056,000(b)*	N/A	1983
Quebec City	2	833,000(b)*	N/A	1985
Mille Iles River	3.5	13,100,000(b)*	N/A	1987
St-François River	3	4,350,000(b)*	N/A	1987
ONTARIO				
All Inclusive Flood Damage Reduction Agreement**	17 (mapping 12) (other 14)	--- 15,400,000 2,200,000(b)*	N/A N/A	1995 1990
MANITOBA				
General Agreement	17	---	N/A	1993
Flood Risk Mapping Agreement	11	2,350,000	45	1987
Studies Agreement	12	310,000	14	1988
Flood Forecasting	5	600,000	4	1986
Flood Protection Projects	7	6,100,000(b)*	10	1990
SASKATCHEWAN				
General Agreement	10	---	N/A	1987
Flood Hazard Mapping and Studies Agreement	(mapping 5) (studies 5)	1,300,000 480,000	30 14	1982 1982
NORTHWEST TERRITORIES				
General Agreement	10	---	N/A	1989
DOE/DIAND Memorandum of Understanding (Territories)	2	225,000(c)*	1	1978
DOE/DIAND Memorandum of Understanding (NWT)	10 (mapping 5)	400,000(c)*	7	1989 1984

* These costs are to be shared equally by the federal and provincial governments except for:
  (a) 33 1/3% federal, 66 2/3% provincial/local.
  (b) 45% federal, 55% provincial/local.
  (c) Costs shared equally by Environment Canada and the Department of Indian and Northern Affairs.

** Agreement applies to flood vulnerable sections of:
  (1) streams, rivers and shorelines of the Great Lakes of 39 conservation authorities.
  (2) 20 river systems not under conservation authorities.

SOURCE: Inland Waters Directorate, 1986.

Conservation and Protection

EN.3. Lands Conservation Program

DESCRIPTION:

The Lands Conservation Program is designed to promote the efficient, effective and environmentally sound use and management of Canada's land resource. It provides scientific and research services aimed at developing a better understanding of the capabilities, uses and management of the land-resource base -- and their implications for sustainable development -- from a national and broad regional perspective. This involves:

(1) the preparation of inventories (e.g. Canada Land Inventory -- CLI) and the provision of information and advice on land characteristics, land capability and land use.

(2) the documentation of land-use change.

(3) research on nationally significant land-use issues.

(4) assessment of the land effects of federal activities.

(5) the provision of computerized land information and data processing services (e.g. Canada Land Data System -- CLDS).

Examples of current initiatives include analyses of stress on the land resource, the impact of land degradation, the abandonment of marginal lands, the economic value of critical land resources, the ecological characteristics and resource potentials of the land resource and evaluation of the impact of federal programs on land use. Such research is intended to influence public policy with the result that conservation objectives and requirements are incorporated into decisions affecting the land resource. Research results are widely distributed as reports or maps to other federal departments, other government levels, professionals associated with renewable resources, educators and the general public. To further focus research efforts and impact on resource decisions, a Land Conservation Strategy is under development.

POTENTIAL LAND IMPACTS:

The Lands Conservation Program provides information, analysis and advice regarding the capability of the land resource for different purposes, trends in land use and important land-use issues which assist decision-makers in assessing the potential impacts of their decisions on land use and helps them to view land as a limited resource. Thus, the program can serve as a basis for informed decisions on land use and land management and help to maintain the nation's land resource for sustainable development. It can minimize or mitigate the adverse

effects of human activity on the land, provided the results of land research are accepted and applied by decision-makers.

Land capability data (CLI), land-use data (Canada Land Use Monitoring Program and Northern Land Use Information Series) and information systems (CLDS) provide the bases for conducting analyses and evaluation of the land resource. National land analysis and modelling provide a perspective on how Canadian society is using or abusing the land resource. The wide dissemination of information to the public on land-use matters has provided in-depth knowledge of issues such as loss of prime farmlands and wetlands, and thus encouraged a better understanding of the importance of promoting the wise use and management of Canada's land resource. Such information may thus assist in promoting the retention of prime resource lands, arresting land degradation and supporting northern development and conservation initiatives.

Land research programs can inform of new approaches and provide data bases for regional-scale land planning (e.g. CLI). If such information is accepted and utilized in land-use planning at the local and provincial levels, it can:

(1) contribute to wise land-use planning which can facilitate economic development and environmental protection.

(2) ensure that land use coincides with its physical capability.

(3) promote the compatibility of land uses.

(4) improve the overall efficiency of land-use patterns.

FPLU IMPLICATIONS:

Increased efforts should be made to ensure that the results of this research program are incorporated effectively into land-resource planning by other federal departments. A goal of the Land Conservation Strategy (under development) should be to facilitate the application of the results of land research into federal land planning and management.

MAGNITUDE:

Lands Conservation Program: $5,413,300 (1985-86 est.)
$5,569,500 (1984-85)
$6,789,300 (1983-84)

Conservation and Protection

EN.4. Waste Management

DESCRIPTION:

Conservation and Protection (C&P) plays a key role at the federal level in the reduction of the adverse environmental effects of hazardous waste. Its activities in waste management are aimed at the prevention, control and mitigation of environmental and public health problems associated with the handling and disposal of hazardous waste on both land and water. Waste reduction/recycling and conservation of energy and resources are key elements of waste management strategies developed and promoted by C&P.

Since waste management is a provincial responsibility, C&P largely plays an advocacy role. It recommends standards and waste management practices that are compatible with environmental criteria, and encourages the adoption of uniform standards across Canada. However, C&P is responsible for waste management on federal lands as well as for regulating the transport of hazardous waste.

POTENTIAL LAND IMPACTS:

Research, standards and regulations for the handling and disposal of hazardous wastes, if adopted and implemented, have the potential to protect the land resource from contamination that could preclude its use for residential, recreational, agricultural, wildlife and other activities. As well, safety regulations for transport of hazardous waste can minimize the risk of pollution along the selected routes. By encouraging effective waste management practices, this program may play a role in the location and site selection of waste disposal facilities, thus affecting not only the site itself but the surrounding area as well.

FPLU IMPLICATIONS:

In its advocacy role, the waste management program should include, where applicable, specific standards that are consistent with and supportive of the objectives and guidelines of the Federal Policy on Land Use. Effective waste management by other government levels and the private sector is also needed to ensure that federal waste management research (and its subsequent application) contribute to protection of the land resource.

MAGNITUDE:

Resources for waste management: $6,400,000/82 person years (1984-85 est.)

EN.5. Industrial Programs: Control of Threats from Specific Human Activities

DESCRIPTION:

Conservation and Protection (C&P) is responsible for ensuring that human activities, particularly industrial activities, are conducted in a manner that minimizes adverse impacts on the environment. It maintains centres of expertise on the environmental consequences of human activities in the following sectors:

(1) mining, mineral and metallurgical processes.

(2) renewable resources extraction and processing.

(3) urban activities.

(4) chemical industries.

(5) oil, gas and energy.

(6) vehicle emissions and transportation systems.

Through description and assessment of impacts, C&P identifies current or potential environmental concerns (air pollution, water pollution, waste generation and on-site disposal or other environmental disturbances) for these sectors. It then develops and promotes preventive or remedial measures on a national and international level. These measures involve development of guidelines, codes of good practice and regulations, as well as enforcement of pollution control measures in the particular industrial sector.

POTENTIAL LAND IMPACTS:

By seeking to protect the environment from potential threats associated with industrial activities, this program can influence the inherent capability and existing or potential use of the land. For example, the research, development and enforcement of effluent standards for industrial processes protect the soil resource and the associated biological communities, especially in ecologically sensitive areas. The maintenance of high water quality also encourages recreational and other uses of shore zones and helps to ensure a healthful water supply for residential areas. In contrast, this program can also have land-use impacts through its restrictions on particular industrial activities. Enforcement of pollution control measures may prove uneconomic to some enterprises and may thus affect the existence, location and scope of industrial activities causing pollution. It may also have consequences for adjacent areas where residential and commercial development depend on economic returns from these industries.

FPLU IMPLICATIONS:

This is an important program for enforcing adherence to pollution control measures that protect the land resource and the environment. The adoption of codes of good practice by industry should be encouraged.

MAGNITUDE:

Program expenditures: $11,800,00/187 person years (1984-85 est.)

Conservation and Protection

EN.6. Priority Environmental Issues: Acid Rain (Integrated Program)

DESCRIPTION:

Acid rain is the first of nine priority issues established by Environment Canada to guide its research, policy making and regulatory activities. Conservation and Protection plans, co-ordinates and manages most activities of an acid rain program under the auspices of the Long-Range Transport of Air Pollutants (LRTAP) program. The research portion is focused in the Atmospheric Environment Service. It involves coordinated efforts among the departments of Environment, Energy, Mines and Resources, Fisheries and Oceans, Agriculture and Health and Welfare, each concerned with a specific aspect of the acid rain problem.

The LRTAP program focuses primarily on acid deposition, but includes other related problems, such as the buffering capacity of soils and the resistance threshholds of aquatic ecosystems to acidification. Basic objectives of the LRTAP Program are to reduce acidic deposition in Canada to a level required to protect ecosystems, and to evaluate the deposition changes and subsequent responses by the environment. It thus attempts to provide a solution to the environmental concerns caused by emissions of sulphur dioxide and nitrogen oxide from both Canada and the United States. These goals are to be achieved through establishing agreements on emission reductions and abatement programs with the provinces and the United States, conducting further research, establishing federal pollution control requirements and undertaking public information and consultation initiatives.

Continued scientific research is particularly essential. Specific research activities conducted under the LRTAP Program include (1) monitoring atmospheric deposition and the ecosystem response to acid rain, (2) determining the extent of the resource at risk to acid rain and (3) developing mitigative measures and control technologies for acid rain.

POTENTIAL LAND IMPACTS:

By seeking to protect the environment from the effects of acid rain, the LRTAP Program can influence the potential, quality and use of the land. Over 70 million ha (about half) of Canada's most productive forests are in areas subject to stress by acid rain. These forests generated $14 billion worth of forest products in 1982. About 50% of the soils of Ontario and Atlantic Canada and 87% of those of Québec are very sensitive to acid rain. The agricultural crops at risk are valued at $3 billion per annum. LRTAP research, monitoring, regulation and negotiation activities aimed at lowering emissions of sulphur dioxide and nitrogen oxide, if

properly implemented or taken into consideration by decision-makers both nationally and internationally, may help to protect the land from the degradation of its capability for agricultural and forestry production and save ecologically sensitive areas from destruction. In this way, the program contributes to the long-term maintenance of the economic, recreational and aesthetic benefits associated with these resource sectors. The program, however, may have land-use impacts through its negotiation and regulation process that result in restrictions to economic activities which are sources of acid emissions, i.e. coal-fired energy generation and smelting and manufacturing processes.

Research and monitoring under this program also provide further knowledge of the actual effects of acid rain on the various types and components of the soil resource as well as on the animal and plant life supported by the land. This knowledge can be used to formulate operationally effective regulations and retrofit technologies, as well as to provide information to forge the political will to undertake adequate control measures.

FPLU IMPLICATIONS:

The research, monitoring, regulation and negotiation activities under this program need to consider the necessary methods and implementation process to effectively mitigate the degradation of the land resource by acid rain.

MAGNITUDE:

LRTAP resources:	A-Base	Supplemental
1984-1985	$8,413,000/174 PY	$8,613,000/27 PY
1983-1984	$9,264,000/180 PY	$7,241,000/44 PY

(Total program includes Environment Canada (Conservation and Protection; Atmospheric Environment Service), Canadian Forestry Service, Fisheries and Oceans, Health and Welfare, Energy, Mines and Resources and Agriculture Canada).

ENVIRONMENT CANADA

Conservation and Protection

EN.7. Priority Environmental Issues: Toxic Chemicals (Integrated Programs)

DESCRIPTION:

Toxics are one of nine priority issues established by Environment Canada to guide its research, policy making and regulatory activities. Environment Canada's strategy related to this priority issue is based on a shared responsibility among governments and actual and potential polluters. The strategy includes (1) preventing or minimizing the release of toxic substances into the environment, (2) internalizing the cost of mitigating or preventing environmental damage (i.e. the polluter pays), (3) studying the behaviour and effects of chemicals and (4) consulting the public and private sector on the trade-offs involved in the use of toxic substances. Conservation and Protection (C&P) has lead responsibility for implementing Environment Canada's environmental quality strategy and administers the Toxic Chemicals Management Program (TCMP). This program aims to achieve a condition in which chemicals in Canada are managed to maintain an environment necessary for the health and well-being of man and ecosystems. Research under the program is conducted throughout Environment Canada, with overall coordination provided by the Priority Issues Directorate of C&P.

The Toxic Chemicals Program currently focuses on problem identification and, to a lesser extent, on assessing the significance of potential toxic chemical issues. This focus will shift towards intervention and evaluation in subsequent years. Existing program thrusts are:

(1) data collection, research and testing of chemical properties, development of biological and chemical measures and control and assurance of quality.

(2) examination of the life cycle of commercial chemicals (i.e. development, assessment, production, distribution, use and ultimate disposal) in relation to human activities.

Since no single agency can resolve the issue of chemical uses in isolation, the federal government is taking steps towards the development of an integrated approach to the management of toxic chemicals. It has established the Interdepartmental Committee on Toxic Chemicals, composed of representatives of many departments and agencies. The Committee's purpose is to identify major issues in the toxic chemicals area, to develop a coordinated approach for chemicals management for the federal government as a whole and to provide advice to ministers on major policy and resource allocation questions related to toxic chemicals.

POTENTIAL LAND IMPACTS:

Through contributing to the protection of the environment from the effects of toxic substances, the Toxic Chemicals Management Program can influence the potential, quality and use of the land.

Research, standards and regulations for the use and disposal of toxic substances, if fully implemented, have the potential to protect the land resource from contamination that could preclude its use for residential, recreational, agricultural and other activities. Standards and regulations for herbicides and pesticides, in particular, have the potential to affect agricultural and forestry practices. They will thus have implications for farming, forestry and adjacent land uses, such as residences and recreation. Also, research and its subsequent application can assist in mitigating the land-use and environmental effects of toxic chemicals released into the environment. This includes development of alternative production processes and new methods to neutralize and dispose of toxic chemicals.

Programs designed to protect the environment such as TCMP, however, can also have land-use impacts through restrictions to economic activities. In effect, TCMP can affect the existence, location and scope of industrial activities releasing toxic chemicals. Thus related manufacturing and adjacent industrial areas, which are dependent on these industries as a source of raw materials for manufacturing or as a source of employment and income, may also be affected.

FPLU IMPLICATIONS:

There is a need to fully incorporate concerns about the potential, quality and use of the land resource in the research and implementation of the Toxic Chemicals Management Program in accordance with the Policy.

ENVIRONMENT CANADA

Parks Canada

EN.8. National Parks

DESCRIPTION:

The basic purpose of the National Parks Branch is to preserve, for all time, areas which contain representative natural features in a system of national parks for the benefit, education and enjoyment of the people of Canada. Each park preserves an outstanding example of the geology, landforms, flora and fauna distinctive to a specific natural region, and provides opportunities for Canadians to visit, learn about and enjoy their national heritage. In each national park, a balance is sought between wilderness preservation and visitor use in order to ensure the continued protection of heritage resources and their enjoyment by future generations. Parks Canada is responsible for the development, operation, maintenance and preservation of existing national parks and the planning, identification and establishment of new parks.

The National Parks System Plan divides Canada into 39 terrestrial natural regions and identifies heritage resources that are representative of each. These areas are referred to as "natural areas of Canadian significance." New national parks are selected from these. Because the system plan identifies gaps in the park system, it is used as a basis for determining where new national parks should be established, and is useful in setting the purpose for a park. Final site selection is based on a detailed study assessing the social and economic feasibility of creating the proposed park in consultation with the province and the local residents concerned. Currently, Parks Canada administers 31 national parks which cover approximately 1,400,000 ha, making the Canadian system one of the largest in the world. Although every province and territory in Canada is represented in the National Parks system, it is only about one-half complete.

POTENTIAL LAND IMPACTS:

The designation of national park areas protects unique and representative lands to maintain their inherent natural values. It serves to protect and provide regulated access and interpretation of ecologically sensitive areas, important wildlife habitat and scenic natural features. Designation thus contributes to the preservation of natural areas. As well, it helps to maintain the diversity of landscapes and biological systems, and is important for recreational activities.

By acquiring land for park development, Parks Canada gains control of the use of the land parcel and the management of the intensity and diversity of activities and facilities on this land,

which can result in significant and diverse land-use impacts. As an important landholder, Parks Canada has an influence on the land quality and use of the site, on surrounding land uses and on the market value of the adjacent land. Federal land acquisition, especially if it forms a sizeable part of a region as national parks usually do, can also serve as a strategic tool for local land planning, in cooperation with provincial and municipal governments. Management plans are prepared for each park in consultation with the public. Conversely, federal activity can run counter to local planning objectives.

The positive impacts of national parks go beyond protection and preservation of heritage. National parks are an important contributor to the Canadian economy via their land assets, their importance as an employer and their important role in the Canadian tourism industry. Consequently, Parks Canada's investments and operational expenditures, in addition to the expenditures of parks' visitors, represent an important economic stimulator locally and nationally. National parks can therefore generate commercial land uses in the area surrounding the park and stimulate the economic development of a relatively large region. This results in increased employment opportunities in the local area, with accompanying increases not only in commercial, but also in residential land uses.

Some adverse impacts may result from designation of a national park area. Nearby communities and surrounding land areas may undergo the development of access routes, parking facilities, accommodation, restaurants, shops and other tourist facilities providing employment and economic opportunity. In some instances existing uses may be supplanted or disrupted. In addition, national park lands may be the source of nuisances for nearby land uses (e.g. the growth of beaver populations, or lack of spraying of spruce budworm). The degree and type of land-use impacts will depend upon the level of land planning, management and control both within the designated park areas and in their surroundings.

FPLU IMPLICATIONS:

In general, the land planning process of this program is consistent with and supportive of the guidelines of the Federal Policy on Land Use.

MAGNITUDE:

Total activity expenditures: $169,291,000 (1984-85 est.)
$163,478,000 (1983-84 est.)

ENVIRONMENT CANADA

Parks Canada

EN.9. National Historic Parks and Sites; Heritage Canals

DESCRIPTION:

Parks Canada is responsible for the preservation, restoration and interpretation of sites and structures of national historical importance throughout Canada, and for the operation and interpretation of historic canal systems. Both are administered by the National Historic Parks and Sites Branch. National Historic Parks and Sites are those locations which commemorate persons, places and events declared to be of national significance by the Minister responsible for Parks Canada on the recommendation of the Historic Sites and Monuments Board of Canada. These locations, afforded recognition by a plaque or monument, are termed National Historic Sites. Locations where the historical resources are fully protected, managed and interpreted in their original place and in an authentic setting are called National Historic Parks. Heritage canals are those initially constructed as defence or commercial trading routes. They are operated and maintained as significant examples of early engineering technology in Canada, and as examples of how man adapted the land and its water courses to suit his needs for transportation and communication. Designation as heritage canals also recognizes their increasing use as recreational waterways and scenic corridors. Currently, Parks Canada administers 83 national historic parks and sites and nine heritage canals.

POTENTIAL LAND IMPACTS:

National historic parks and sites and heritage canals serve to protect and preserve nationally-important heritage areas and provide a base for tourism and recreation pursuits. Heritage canals, for example, still serve their original purpose of opening inland routes to navigation, but they are used primarily by tourist and recreational boats today. In addition, Heritage Canals can provide a variety of opportunities for the public to enjoy recreational activities of land and water, in some cases, with the development of associated facilities.

Historic parks and sites are designed for public accessibility to promote educational enrichment and consequently attract investment in the development of associated services. Nearby communities and surrounding land areas may undergo the development of access routes, parking facilities, accommodation, restaurants, shops and other tourist facilities which provide employment and economic opportunities locally, but may supplant or disrupt existing land uses. The degree and type of land-use impact may depend upon the level of planning, management and control both within the designated areas and in their surroundings.

Historic Parks and Sites are protected by the federal government to maintain their inherent value, usually through designation or acquisition. Generally, the immediate historical area of a park or site involves restricted land use. But, for larger historic parks, land uses such as grazing and haying are permitted on lands within the park, although these lands are considered to have historical value. In the case of canals, there are many leases, licences, concessions, etc. which allow for alternate land uses. Designation and development of an historic park can enhance land values locally through the stimulus provided to the provision of services and local employment. But entry by the federal government into the local market to purchase land can be locally disruptive.

FPLU IMPLICATIONS:

In general, the land planning process of this program is consistent with and supportive of the guidelines of the Federal Policy on Land Use.

MAGNITUDE:

Historic parks and sites -- $57,509,000 (1985-86 est.).
total activity expenditures: $70,253,000 (1984-85 est.).

Heritage canals: approximately $43 million.

Parks Canada

EN.10. Cooperative Heritage Areas

DESCRIPTION:

Cooperative heritage areas (CHAs) are areas which contain resources of outstanding natural or cultural heritage significance. These areas are managed under agreements for recreation and conservation (ARC) by Parks Canada, provincial and territorial governments, other federal departments or other public and private organizations. ARC agreements are designed to encourage heritage resource protection, as well as public use, understanding and recreational enjoyment of these heritage resources. They commit participating agencies to a joint process of research, planning, development and management of the areas. The ARC approach offers opportunities for heritage conservation in circumstances where the national parks approach proves unworkable because of, for example, extensive private ownership or ongoing resource extraction.

Cooperative heritage areas may be of several types. In some cases, there may be a variety of distinctive natural and cultural resources concentrated in an area which, taken together, are of national significance to Canada. In other cases, there may be an example of one particular type of heritage resource which is considered to be of national significance, e.g. historic land and water routes, urban conservation areas or rural cultural landscape. In identifying and selecting potential cooperative heritage areas, provinces and territories play a key role such that agreement proposals reflect their priorities and responsibilities. Parks Canada's involvement in cooperative heritage areas is normally in the interpretation, restoration, visitor services and information programs. There are at present two signed agreements: the Canada-Manitoba Agreement for Recreation and Conservation on the Red River Corridor and the Canada-British Columbia Agreement on the Alexander MacKenzie Heritage Trail. Funding under two other agreements was completed in 1983-1984.

POTENTIAL LAND IMPACTS:

Designation as a cooperative heritage area protects the natural, cultural and historic sites located within it and helps maintain their inherent value as a national heritage where other approaches are unworkable because of conflicting land uses. By encouraging public use for recreation, land included in a CHA may be affected by direct impacts from visitor activities and by spin-off development of accommodation, roads, residential areas and service facilities. It may thus contribute to the development of surrounding land areas while protecting specific natural and cultural resources in the cooperative heritage area, therefore providing economic impetus to the local region. Without proper management, however, tourism development could

degrade the land resource or destroy fragile natural features, and tourism facilities could supplant or disrupt existing uses. The degree and type of land-use impacts will depend upon the level of planning, management and control both within the designated resource sites and the cooperative heritage areas.

FPLU IMPLICATIONS:

The planning and management process for cooperative heritage areas should develop guidelines and criteria for decision-making which are based on the objectives and guidelines of the Federal Policy on Land Use.

MAGNITUDE:

ARC Agreements	1984-85 ($'000)	1983-84 ($'000)	1982-83 ($'000)	1981-82 ($'000)
Canada-Ontario Rideau-Trent-Severn (CORTS) Agreement	--	11	84	84
Canada-Saskatchewan Subsidiary Agreement -- Qu'Appelle Valley Agreement	--	254	---	436
Red River Corridor Agreement	1,257	1,656	2,210	402
Alexander MacKenzie Heritage Trail	106	409	200	---
TOTAL	1,363	2,330	2,494	922

ENVIRONMENT CANADA

Parks Canada

EN.11. Canadian Heritage Rivers System

DESCRIPTION:

The establishment of the Canadian Heritage Rivers System (CHRS) was announced in January 1984 by the federal and territorial governments and five provinces. (A sixth province joined in May of 1984.) Objectives of the CHRS are to give national recognition to the important rivers of Canada and to ensure their future management such that the natural and human heritage they represent is conserved and interpreted. It also seeks to allow the opportunities they possess for recreation and heritage appreciation to be realized by residents of and visitors to Canada. Rivers which (1) are outstanding examples of Canada's natural heritage, (2) have played a significant role in Canadian history or (3) offer outstanding opportunities for recreation can be designated as "Canadian heritage rivers". Each river so designated will be developed and managed to conserve its distinctive heritage value and increase opportunities for public use by the government in whose jurisdiction it is located.

The Canadian Heritage Rivers Board has been set up to review nominations and to recommend to the Minister responsible for Parks Canada, and the appropriate federal, provincial and territorial ministers of the nominating government, whether such rivers meet selection guidelines. As of February, 1986, ten rivers have been accepted by the Board and the respective ministers as candidates for inclusion in the CHRS. With the completion of management plans in 1986, the French River in Ontario and the Alsek River in Kluane National Park Reserve (Yukon) were the first to be formally designated as Canadian heritage rivers.

POTENTIAL LAND IMPACTS:

By encouraging the protection and the wise management of Canada's best natural, historic and recreational rivers, the CHRS recognizes the heritage and recreational values of Canada's outstanding rivers. The development and provision of interpretative and recreational facilities or activities along the designated watercourses may add some low-intensity development to adjoining land areas. The degree and type of land-use impact along the river will depend upon the level of planning, management and control within both the designated area and the surrounding lands, but is anticipated to be minimal.

If management plans adopted by the responsible province or territory limit the river's use to recreation and heritage conservation, designation as a Canadian heritage river may preclude its use for other purposes, such as hydroelectric dams, as well as affect the surrounding land uses

and land values. (However, if the managing agency feels that such development is essential, de-designation from the system is also possible.) It is important to note that designation as a Canadian heritage river is only a recognition of the significance of the river. It is designed to encourage the province under whose jurisdiction it falls to develop and manage the river corridor according to its heritage values. Also, there is no transfer of land. Therefore, CHRS by itself does not preclude other land uses.

FPLU IMPLICATIONS:

The planning and management process for the Canadian Heritage Rivers System program should develop guidelines and criteria for decision-making which are based on the objectives and guidelines of the Federal Policy on Land Use, especially with respect to those rivers or river segments within national parks.

MAGNITUDE:

CHRS federal expenditures: $160,000 (1985-86 est.)
$180,000 (1984-85 est.)
$205,000 (1983-84 est.)

Related Agency that Reports Through the Minister of Environment

EN.12. Federal Environmental Assessment Review Office

DESCRIPTION:

The Federal Environmental Assessment Review Office (FEARO) administers the Federal Environmental Assessment and Review Process (EARP) which was established to ensure that potentially adverse environmental consequences are considered as early as possible (i.e. at the planning stage) in federal programs, projects and activities. Federal projects are considered to be those that are initiated by federal departments and agencies, those for which federal funds are solicited and those involving federal property. FEARO:

(1) develops and implements procedures, guidelines and administrative references to facilitate the environmental assessment process.

(2) ensures that all projects submitted to environmental impact assessment panels receive competent reviews.

(3) evaluates the performance of the environmental impact assessment process and recommends appropriate changes to improve its effectiveness.

Federal departments and agencies are obliged to screen their proposed activities for impacts on the environment. If it is found that an activity may have significant adverse environmental effects, it must be referred to FEARO for a formal review by an independent panel. Separate environmental impact assessment panels are established for each project referred to FEARO for review. After an environmental impact statement is prepared based on Panel guidelines, the document is subjected to full public review. Public hearings are a central part of the review process, and provide opportunities for mutual education of both the proponents of the activity in question and members of communities directly affected. Following a study of the evidence presented, the Panel recommends to the Minister of Environment what action should be taken. The final decisions regarding undertaking, modifying or abandoning projects are made at the ministerial level.

POTENTIAL LAND IMPACTS:

By requiring that environmental effects be taken into account early in the planning of projects that require federal money or property, FEARO promotes environmentally sensitive and publicly responsive project planning and decision-making across government. Applied early in the planning process, EARP can assist in identifying potential environmental problems and help to provide solutions to them at the design stage. FEARO can therefore assist in the application of the Federal Policy on Land Use to projects submitted for review. Thus, it has the potential to

assure adequate protection for the environment, including the land resource, as well as the needs of the local community affected by proposed development projects.

By seeking to protect the environment, FEARO activities can influence the potential, quality and use of the land, and may help prevent degradation of the land resource by requiring that environmental protection criteria be satisfied for project development. In cases they review, FEARO advice may also affect government decisions on how, where and when to acquire or dispose of land which in turn may have a pervasive influence on the land quality and use of the site, on surrounding land uses and on the market value of the land. However, there is need for a thorough audit as part of the follow-up procedures. Mitigative measures suggested by FEARO may be incomplete once put in place, or impacts which were not previously considered may appear during implementation or use.

FPLU IMPLICATIONS:

The objectives and guidelines of the Federal Policy on Land Use should be expressly included in FEARO guidelines, criteria and assessment procedures.

MAGNITUDE:

Program operating expenditures: $3,732,000/29 person years (1985-86 est.)
$2,370,000/25 person years (1984-85 est.)

Related Agency that Reports Through the Minister of External Affairs

EX.1. International Joint Commission

DESCRIPTION:

The International Joint Commission (IJC) was established under the 1909 Boundary Waters Treaty to assist in the solution and prevention of disputes in waters shared by Canada and the United States. Among the Commission's duties under the Treaty is the quasi-judicial responsibility for questions of water levels and flows on boundary and transboundary waters. The IJC's approval is required before an applicant can construct works on transboundary waters that will raise levels on the other side of the boundary. Its approval is also required before a proponent can construct works that will change levels on the other side of a boundary water. Commission "Control Boards" regulate, within specified limits, the levels and flows in the Great Lakes system.

The IJC investigates specific problems and issues referred to it by the two governments. It also deals with water quality issues, particularly those relating to the 1978 Great Lakes Water Quality Agreement. This Agreement expresses the determination of each country to resolve and enhance the water quality of the largest freshwater system in the world. It gives the IJC a number of specific responsibilities and functions including the provision of advice to governments concerning progress towards compliance with the Agreement. It has, for instance, responsibilities to monitor and report on progress under the Agreement, as well as to carry out a variety of liaison, co-ordination and planning roles. All these functions influence events, although the IJC does not exercise control in the direct sense.

The Commission consists of three Canadians appointed by the Governor-in-Council and three Americans appointed by the President with the advice and consent of the Senate. The commission members act not as separate national delegations representing their governments, but as a single body seeking common solutions. The Commission currently has 24 control, investigative and advisory boards.

POTENTIAL LAND IMPACTS:

IJC investigations and advice affect land quality and use only to the degree that is accepted by the member governments. The Commission's investigations and recommendations concern the level and quality of boundary water which can affect shoreline use for recreational and residential purposes. The IJC monitors programs on Great Lakes water quality improvements, and on request, investigates pollution from agriculture, forestry and other land-use activities, making

recommendations for remedial measures. As a result, changes in the management and use of lands in the Great Lakes Basin may be recommended by the Commission. However, since the governments are not obliged to accept recommendations from the IJC, the Commission's programs cannot ensure that water quantity and quality objectives, and related land issues, are satisfied.

The approval of works, such as dams and dikes on boundary river systems, gives the IJC the potential to affect large tracts of land. It may do so either by the flooding of certain areas, or through a reduction in the flow or level of the waters which may affect, for example, salmon spawning grounds.

FPLU IMPLICATIONS:

In general, the activities of the IJC are consistent with and supportive of the Federal Policy on Land Use. Specific reference to the guidelines of the Policy should assist the IJC in evaluating resource issues referred to it, and in providing recommendations.

MAGNITUDE:

Total program expenditures: $3,384,000 (1984-85 est.)
$3,180,000 (1983-84 est.)

Tax Policy and Legislation Branch

FI.1. Tax Policy and Legislation (Branch)

DESCRIPTION:

The Tax Policy and Legislation Branch develops policy and advises on matters relating to taxation and the overall federal tax system. It undertakes economic and quantitative analyses of policy issues re: personal and corporate income tax, energy and mining taxation, international tax concerns and the policies of all levels of government in Canada that have an impact on the tax system. Studies relating to the impact of the tax system and proposed tax changes on the allocation of resources, the distribution of income and economic growth are carried out.

The Branch provides advice and recommendations for:

(1) changes in federal excise and sales taxes as they apply to goods produced in Canada or imported into the country.

(2) changes in the federal income tax, with particular reference to the commercial and legal implications of proposed changes.

As well, it consults and negotiates with industry on the design of tax incentives for specific projects. Finally, the Branch seeks to develop tax policies consistent with the government's objectives in other areas -- social, cultural, economic, political, regional and federal-provincial relations.

The Branch is concerned with policy making, not implementation. It is not involved in the actual collection of taxes or the interpretation of tax law, both of which are the responsibility of Revenue Canada.

POTENTIAL LAND IMPACTS:

By assisting the government in preparing and implementing taxation policies that will best accomplish major national economic and fiscal objectives, the Tax Policy and Legislation Branch affects land use and allocation in both a direct and indirect fashion through its influence on land-using economic sectors. The level of tax write-offs can influence the viability and level of investment in many industries and hence the expansion, contraction and intensity of use of lands for agriculture, forestry, mining, recreation, etc.. For example, depletion allowances to the mining industry have enabled it to go ahead with exploration activities. Depending on management practices, these activities may affect land positively and/or negatively. The

ability to obtain a tax deduction on lands provided as a gift to the Crown -- such as wetlands -- directly affects the future use and management of the lands involved. Tax policy can also act as an instrument to encourage various environmental conservation practices, through accelerated corporate tax deductions on the purchase of pollution control equipment, for example, or through fast write-offs for equipment used in energy conservation.

The way in which a tax is applied, whether to raw or finished products, can also indirectly influence the use of land by the industries involved. Excise taxes for instance can assist or discourage investment in particular products -- food, beverages, etc. -- which use raw products from the land. The level and scope of the federal sales tax at the wholesale level affects the price and consumption of products deriving raw materials from land-based sectors. For example, the building products tax may impact on the demand for forest products. Tax policy regarding northern development is especially important as it can encourage or discourage totally, investments in the North with consequent effects for the conservation or utilization of the resources. For example, the income tax system provides special treatment for residents of the North and in isolated posts. These consist of additional deductions, which recognize the higher housing/travel costs incurred in these areas. Such treatment thus encourages land development in more remote areas.

A number of issues relating to the taxation of the property of natives situated on designated Indian land also have implications for land use. For instance, various tax exemptions granted Indians under the Indian Act may influence both the level and type of activity on these lands.

FPLU IMPLICATIONS:

In sum, there is an opportunity to identify and develop specific guidelines that would be applied in the review and formulation of tax policy to ensure the most beneficial effect possible for the use and management of the land resource, pursuant to the Federal Policy on Land Use.

Federal-Provincial Relations and Social Policy Branch

FI.2. Policy Advice on Social Development, Housing and Land Claims

DESCRIPTION:

The Social Policy Division of the Federal-Provincial Relations and Social Policy Branch is responsible for policy advice in the broad field of social, manpower, employment and cultural policies. It provides general advice on the social, economic and fiscal implications of policy and program development in such areas as housing, native peoples (e.g. land claims), unemployment insurance, labour relations and public and private pensions. The Division is the main point of contact for the Finance Department with other federal departments and agencies directly responsible for social policies.

POTENTIAL LAND IMPACTS:

Policy advice regarding the economic and fiscal implications of social programs may have significant land-use implications. Native land claims have important considerations vis-à-vis the use and management of Canada's land resource. Significant areas of the Canadian land mass are under claims negotiation, with resource development deferred in the short term, while long-term land ownership and resource management concerns are considered. Also, housing is a major urban land use; therefore, any housing policy must be consistent with and/or encourage orderly, contiguous urban development that avoids urban sprawl on Canada's best resource lands or the scatteration of residences throughout the countryside. Policy advice provided by the Finance Department is therefore directly pertinent to many land-use issues in Canada.

FPLU IMPLICATIONS:

Criteria and guidelines used in program reviews and policy advice should take into consideration resource-based constraints and opportunities on which the success of employment and social programs often depend.

There is potential for the Social Policy Division in its policy and program review role to assess programs in regard to the application of the objectives and guidelines of the Federal Policy on Land Use. As part of its assessment function, the Social Policy Division could recommend that, in the case of proposals with significant potential to influence land use, the proponent departments seek the views of the Interdepartmental Committee on Land.

Economic Programs and Government Finance Branch

FI.3. Policy Advice on Canada's Natural Resources: Energy, Oil and Gas, Minerals, Northern Development, Environment and National Parks

DESCRIPTION:

The Energy and Resource Policy Division of the Economic Programs and Government Finance Branch has the responsibility to review the development of policies and programs for Canada's natural resources. A variety of resource policies are dealt with, including energy, oil and gas and minerals. The Division also provides advice on policies for northern development, the environment and national parks. Its main tasks are to examine natural resource proposals made by other federal government departments, to evaluate their economic and fiscal impact and to make recommendations to the Minister of Finance regarding the public benefits of these proposals. Through membership on interdepartmental committees, the Division participates in the review of relevant federal policies.

POTENTIAL LAND IMPACTS:

Advice on natural resource policies can affect land use through its influence on decisions relating to resource-based economic sectors, such as agriculture, forestry, mining, energy, northern development and environment-related activities. The primary economic sectors are major users of land as a productive resource, and play a major role in the allocation and management of Canada's land resource. Depending on the policy directions selected, federal actions with respect to the primary sector can lead to:

(1) over-development, or underutilization and abandonment of land.

(2) multiple resource use or conflict among incompatible uses.

(3) soil conserving practices and resource renewal.

(4) land degradation and environmental deterioration.

FPLU IMPLICATIONS:

Program review and policy advice for resource sectors should give weight to objectives of the Federal Policy on Land Use, taking into consideration the importance and significance of land as a limited resource. It should encourage policies which are sensitive to the need for conservation and renewal of the land resource, as well as the risks of exploitation and overdevelopment. The long-term sustainability of production from land resource sectors needs to be one of the main criteria in economic review and policy advice for the resource sectors.

There is potential for the Energy and Resources Policy Division in its policy and program review role to assess programs in regard to the application of the objectives and guidelines of the Federal Policy on Land Use. As part of its assessment function, the Division could recommend that, in the case of proposals with significant potential to influence land use, the proponent departments seek the views of the Interdepartmental Committee on Land.

Economic Programs and Government Finance Branch

FI.4. Advice on Industrial and Science Policy and Regional Development, Transportation, Communications, Forestry, Agriculture and Fisheries

DESCRIPTION:

The Economic Development Division of the Economic Programs and Government Finance Branch provides advice on program and policy formulation in the areas of industrial development, regional development, transportation, communications, agriculture, fisheries and forestry and science policy and economic development generally. Primarily, it examines programs and policies of other federal departments in order to ensure that the economic implications of new or modified program proposals are recognized and are consistent with overall government economic and financial objectives. To carry out its responsibilities, the Division is involved in indepartmental policy reviews, consultations with the private sector, industry sector analysis, and project and program evaluation.

POTENTIAL LAND IMPACTS:

Policy advice on industrial and regional development may impact on land use by affecting land-using sectors involved in regional economic development such as transport, manufacturing industries, forestry, agriculture and fisheries. Federal policies and programs may affect the amount and type of land used by these sectors, the land management practices employed and the economic viability and growth of surrounding communities. Too much focus on economic development without environmental screening may lead to conflicts re: resource renewal and environmental conservation. Too little focus on economic development and regional assistance can lead to underutilization and abandonment of the land resource. Transport programs and subsidies may act as a lever for development of communities and the private sector in a region, but also serve to distort and reduce economic opportunities and resource development in another area. Policy advice regarding the economic and fiscal implications of industrial, transportation, forestry, agriculture and fisheries programs may therefore assist the government in preparing and implementing measures that value the resource base as well as the economic climate, provided that land resource and other environmental concerns are taken into account.

FPLU IMPLICATIONS:

There is potential for the Economic Development Division in its policy and advisory capacity to assess programs in regard to the application of the objectives and guidelines of the Federal Policy on Land Use. As part of its assessment function, the Economic Development Division could

recommend that, in the case of proposals with significant potential to influence land use, the proponent departments seek the views of the Interdepartmental Committee on Land.

Agencies Reporting to Parliament Through the Minister of Finance

FI.5. Tariff Board: Research and Recommendations: Appeals

DESCRIPTION:

The seven-member Tariff Board acts as an independent commission of inquiry into matters relating to goods that are subject to or exempt from customs or excise duties, and also functions as a quasi-judicial court of appeal on rulings in these areas.

In its role as a commission of inquiry, the Board undertakes specific trade and tariff studies at the request of the Minister of Finance. Based upon hearings with importers, manufacturers and consumers, as well as the work of its own research staff, the Board prepares recommendations on rates of duty, the definition of tariff items and any other matters referred by the Minister. The report of the Board is forwarded to the Minister of Finance who is required by law to table it in Parliament.

In its role as a court, the Board hears appeals resulting from rulings by National Revenue (Customs and Excise) on tariff classifications or value for duty, and on the normal value and import price of goods. The Board may also declare the rate of federal sales tax payable on an article or on transportation by air, or whether a tax exemption applies. The Board may also hear appeals on charges levied on petroleum and petroleum products as well as the export of any oils. Its rulings may be appealed to the Federal Court and the Supreme Court.

POTENTIAL LAND IMPACTS:

Through its studies, appeals and recommendations, the Tariff Board can influence trade policies and tariff levels which regulate the influx of foreign products. These activities affect the amount of money flowing into and out of the country and the relative amount and type of activity in the primary and secondary sectors. Thus they can potentially influence:

(1) the relative ability of each industry (e.g. agriculture, forestry) to compete for land.

(2) the amount and type of land used by these sectors.

(3) the intensity of land use.

(4) the land management practices employed.

In addition, policies and tariffs which control or promote trade can indirectly influence the location and extent of various land uses on a regional or national basis.

Along with other factors, tariff barriers can protect and even stimulate the expansion of specific land uses such as tender fruit production and may encourage a more intensive land use in selected primary products. Tariffs can also help to maintain manufacturing industries as viable industrial land uses, particularly in central Canada, thus helping to maintain certain communities and the supporting infrastructure and urban land uses. On the other hand, low tariff protection may accentuate loss of certain industries and unique resource lands (e.g., fruitlands) which depend on the protection offered by tariff barriers.

The land-use effects of changes in trade controls or promotional activities can be highly significant in specific economic sectors (e.g., the vegetable industry) or in local areas (e.g., the Niagara Peninsula). However, the potential to use these controls is severely limited due to restraints within the international General Agreement of Tariffs and Trade (GATT). If Canada were to decide to increase any tariffs that are bound against increase in GATT, it would be required to offer compensation to foreign suppliers, often in the form of lower tariffs on related products. Altered export levels or patterns might ultimately be reflected in land-use changes or the underutilization of land in the sectors thus affected.

FPLU IMPLICATIONS:

There is an opportunity for the Tariff Board to incorporate the guidelines of the Federal Policy on Land Use into their investigation and review process. In cases where proposed changes in tariff regulations have the potential to significantly influence land use, it may be appropriate for the Interdepartmental Committee on Land to review Tariff Board decisions for comment to the Department of Finance.

MAGNITUDE:

Tariff Board Program Expenditures: $1,614,000 (1984-85 est.)
$1,544,000 (1983-84 est.)

Fish Habitat Management Branch (Pacific and Freshwater Fisheries)

FS.1. Freshwater and Marine Habitat

DESCRIPTION:

Protection of fish and their habitat is provided for under the federal Fisheries Act. Responsibility for promulgation and enforcement of the regulations under the Act lies with the Minister of Fisheries and Oceans and his department (DFO). If a project is likely to result in any alteration, disruption or destruction of fish habitat, the Minister can require that the project be modified, restricted or abandoned as considered necessary. Failure to comply may result in severe legal penalties. The Fisheries Act is therefore a powerful tool to ensure the sound management of fisheries and fish habitat, and to influence activities in watersheds.

Proposed programs for fish habitat management aim to conserve, restore and develop fish habitats in order to maintain and improve the long-term production of Canada's fisheries resources. They apply in areas where the federal government exercises its direct authority to manage the fishery:

(1) fisheries of Newfoundland, Nova Scotia, New Brunswick and Prince Edward Island.

(2) the marine fisheries of Quebec.

(3) the anadromous (river-ascending for breeding) salmon and marine fisheries of British Columbia.

(4) the fisheries of the Yukon and Northwest territories.

Mitigative and compensatory measures may be required by DFO to protect the productive capacity of the fish habitat when developments conflicting with the fisheries uses of freshwater are proposed. These could include dyking and stream channelization, building of causeways and reservoirs, construction of electric power installations, dredging or filling of marshlands, land clearing, etc.. In those areas of Canada where federal fisheries legislation is administered by a provincial fisheries management agency, the two levels of government may develop administrative agreements to ensure that fish and fish habitat are protected.

POTENTIAL LAND IMPACTS:

The Fisheries Act is a strong instrument that can be used to influence activities in watersheds and the surrounding land when the government chooses to fully utilize its authority. Within drainage basins, it can prevent disruption of streamflow harmful to fish resulting from dams, dykes and other structures which also flood the land resource. The Act can be used to curb polluting practices such as sedimentation from the clearcutting of forests or excessive

agricultural pollution resulting from improper use of fertilizers, pesticides or manure. The curbing of some of these practices will also enhance the long-term maintenance of the land resource. As well, protection of critical fish habitat lands contributes to the maintenance of the diversity of biological systems, the preservation of groundwater recharge areas and the conservation of lands for recreational purposes.

Productive fish habitat provides extensive economic and social benefits throughout Canada. Commercial and recreational fisheries contributed more than $3 billion annually to the national economy in 1982 dollars. Other less tangible social benefits, such as support for traditional lifestyles in small, remote communities also flow from the fishery base. The proposed Fish Habitat Management Policy has the potential to directly influence the level of land management and the use of watersheds. It may ensure that land surrounding streams retains wetlands vital to so many wildlife species, and help maintain spawning grounds for fish. Enhancement of habitat and maintenance of fish populations can provide a recreational resource for an area or, as is especially the case in the North, form the basis for an economic livelihood. The proposed policy has the potential to encourage land conservation and environmental protection by applying resource-based constraints to development. It, however, also may be overly restrictive and lead to land-use conflicts with forestry, agriculture, urban and intensive recreation uses. The Department recognizes the potential impact of fish habitat decisions on regional development, industrial development and public projects. Under this policy, the Department would undertake to take timely and consistent decisions to protect productive fish habitat.

Recognizing that the habitat provisions of the Fisheries Act cannot legally be delegated to any province, negotiations are proposed with those provinces where the federal government has withdrawn from the day-to-day management of the fishery, to develop satisfactory administrative agreements. Federal authorities have indicated their preparedness to assist their provincial counterparts wherever possible, and particularly in cases where federal-provincial agreements specifically require assistance.

FPLU IMPLICATIONS:

The Federal Policy on Land Use and the proposed Fish Habitat Management Policy could become mutually supportive in terms of objectives, guidelines and the application of operational criteria and standards.

MAGNITUDE:

Fish Habitat Program (total): $17 million (1984-85)

Administration Program

IN.1. Office of Native Claims

DESCRIPTION:

In resolution of native claims, the Minister of Indian Affairs and Northern Development is supported by two programs: the Lands, Revenues and Trusts Program (Specific Claims Branch), and the Self-Government Program (Comprehensive Claims Branch). Accordingly, the negotiation of accepted claims is guided by separate policy statements, namely Outstanding Business for specific claims, and In All Fairness for comprehensive claims. The programs are also responsible for recommending policies relating to the development of claims and the conduct of negotiations.

Specific claims are concerned with the administration of land and other assets under the Indian Act and with the fulfillment of Indian treaties and other formal agreements. Specific claims address issues of compensation for an agreed breach of lawful obligation. Comprehensive claims relate to the traditional use, occupancy and the special relationship that native people have with the land. The latter are accepted for negotiation when it can be shown that the native title has not been dealt with by treaties or other means. Comprehensive claims negotiations involve detailed discussions with claimant groups on a broad range of negotiable items such as protection of hunting, fishing and trapping rights, land title, cash compensation and self-government on a local basis.

Review of native claims involves the identification and analysis of their legal, historical and factual elements in conjunction with the federal Justice Department. Various other departments are drawn into the preparation and presentation of positions. Furthermore, participation and involvement of provincial and territorial governments must be assured. Funding is provided to native groups for claims research assistance through the Native Claims Program.

Once final agreement has been reached among all parties involved, the process entails seeking approval by Treasury Board and/or Cabinet. For comprehensive claims, legislation must be passed by Parliament. Compensation paid out as a result of the settlement of land claims is arranged through the Native Claims Program under the provisions of final settlement agreements.

POTENTIAL LAND IMPACTS:

The settlement of specific claims may involve the transfer of specified areas of land to Indian bands. Comprehensive claim settlements may involve the transfer of significant areas of land (some of which may include subsurface resources) to native beneficiaries. The latter settlements may provide for enhanced native involvement in land management and planning decisions on Crown lands by means of membership on advisory committees, boards or other similar bodies. All laws of general application, unless otherwise specified, will apply to these lands. The native beneficiaries, as land owners, however, will be able to establish priorities concerning such activities as forestry, agriculture, recreation, wildlife and, where they hold title over the subsurface estate, mineral and hydro-carbon extraction. Consequently, land transferred to native groups may be managed and used differently than before. On the other hand, claims settlements could lead to underutilization of the land resource in relation to its capability. The types of land impacts which may result from the claims settlement process may have an important influence on the pace and timing of future land development.

FPLU IMPLICATIONS:

The objectives and guidelines of the Federal Policy on Land Use should be expressly incorporated into the environmental review process undertaken as part of the native land claims negotiations. Land claims negotiators are aware of the Policy, especially Policy Statement # 9, which requires appropriate environmental provisions on all transferred lands.

MAGNITUDE:

The value of claims settlements over the next 25 years could reach $6 billion and involve thousands of square kilometres of land, particularly in the North and British Columbia.

(1) Native Claims Program Expenditures: $67,517,000 (1985-86 est.)
$25,717,000 (1984-85 est.)

(2) Status of Claim Settlements:

	Up to 1975	1976-80	1980-81	1981-82	1982-83	1983-84
(A) Specific Claims						
Submitted	165	78	7	9	11	10
Settled	8	2	2	2	2	4
(B) Comprehensive Claims						
Submitted	4	17	4	4	4	1
Accepted for Negotiation	3	12	0	0	0	8
Rejected	1	2	0	0	0	0
Agreements: Final	1	1	0	0	0	0
Agreement-in-principle	0	1	0	0	0	0

(3) Claims Settlements with Cash Compensation (from 1974 to 1984):

Specific Claims	$ 30,490,432
Comprehensive Claims:	
James Bay Crees and Northern Québec Inuit Association (James Bay and Northern Québec Agreement)	$ 32,750,000
Naskapis of Schefferville (Northeastern Québec Agreement)	$ 1,310,000
Committee for Original People's Entitlement (Inuvialuit Final Agreement)	$152,000,000
TOTAL	$216,550,432

SOURCE FOR #2 AND 3: Canada, Treasury Board, 1984a, 1985, Part III, DINA.

Indian and Inuit Affairs Program

IN.2. Lands, Revenues and Trusts (Operations) Branch: Management and Control of Indian Reserve and Other Crown-Owned Land

DESCRIPTION:

Indian bands enjoy considerable autonomy regarding the use and management of their reserve lands, even though the Federal Government has statutory authority for the management of the reserve lands. Lands, Revenues and Trusts (Operations) of the Department of Indian Affairs and Northern Development provides for the management and control of Indian lands. It is responsible for the administration and management of reserve lands and other crown-owned land used by the department in carrying out its programs for the Indian and Inuit people. It can acquire lands for addition to reserves in accordance with prescribed departmental policy and restore former reserve lands to reserve status. The Branch maintains an Indian Lands Registry which records all lawful interests held by individual Indians, bands of Indians and non-Indians in Indian reserves.

Lands, Revenues and Trusts identifies by research lands to which an Indian interest in minerals applies. In addition, the branch administers Indian timber regulations, implements forest fire protection agreements with the provinces and maintains trust responsibility in relation to forest resources on Indian reserves.

POTENTIAL LAND IMPACTS:

In statutory terms, the Reserves and Trusts program has the authority to control the use and management of Indian reserves. If the authority to control reserves is exercised through provision of advice, land-use studies and planning and development activities, the program can have a pervasive influence on:

(1) the use of reserve lands.

(2) the management of the intensity and diversity of activities and facilities on these lands.

(3) the extent of impacts on surrounding land uses.

In practice, however, it is decisions by the Indian bands themselves which primarily impact on the use and management of reserve lands and affect nearby lands. In some areas, Indian reserves are underutilized compared to the soil capability, and compared to the use of surrounding land of similar capability, e.g., reserves in the Okanagan Valley. Land use on reserves is sometimes not complementary or compatible with surrounding land use (e.g. underutilization of land on the

fringe of urban areas). As well, Indian reserve lands may occasionally be home to "less desirable" uses, such as billboards and mobile home parks, not permitted in nearby urban areas. On the other hand, some Indian reserve lands exhibit good land planning and management practices established by the Indian bands, often in consultation with land-resource professionals. There is great variation in the use and management of Indian reserve lands across Canada. This reflects both the differences in the resource capability of the land and the different approaches and the levels of expertise in land management of the bands, which operate relatively autonomously on each reserve.

The Federal Government can assist Indians in the wise allocation and management of their reserve land through:

(1) provision of land-planning and management advice regarding appropriate and compatible land uses.

(2) the utilization of the land resource in relation to its capability.

(3) the use of land conservation practices.

(4) the staged development of non-renewable resources.

FPLU IMPLICATIONS:

The Reserves and Trust program should develop and apply in consultation and cooperation with the Bands, land-planning guidelines consistent with the Federal Policy on Land Use. These would provide for use and management of reserve land in relation to its resource capability and for compatibility with the uses and policies of local governments near the reserves.

MAGNITUDE:

Total Program Expenditures: $28,440,000 (1984-85 est.)
$23,433,000 (1983-84 est.)

Indian and Inuit Affairs Program

IN.3. Economic and Employment Development: Assistance in Creating Business, Employment and Socio-Economic Development Activities

DESCRIPTION:

The Department of Indian Affairs and Northern Development (DIAND) provides assistance to Indians, Indian bands and Inuit people in taking advantage of business, employment and socio-economic development opportunities. Consultant services are available to assist both existing and developing businesses in a variety of economic areas, and to help Indian bands in entering and participating in community-based socio-economic development projects. Equity financing as well as direct and guaranteed loans are available for Indian business development ventures on Reserves.

DIAND also develops and administers employment and human resources programs for Native people, such as the Training-on-the-Job, Mobility and the Indian Community Human Resources Strategies programs. It also coordinates and delivers to native people, various employment programs, which are funded by the Canada Employment and Immigration Commission, for example the Summer Youth Employment Program. These employment programs provide employment to Indians on reserves and in other communities. Employment and placement services as well as training and assistance are provided to those natives who wish to relocate off the reserves to areas of higher employment opportunity.

POTENTIAL LAND IMPACTS:

The economic and employment development assistance provided can help develop the economic viability of Indian and Inuit communities and reserves. In this way, it can affect the intensity and variety of land use activities, both on the reserves and in surrounding areas, and increase the rate of development of Indian communities and associated services. This development may result in appropriate use of the land resource, or in increased conflicts between land use for economic purposes and environmental concerns, such as land degradation. Economic assistance also has the potential to shift Indians from reserves when the population is in excess of the resource-based economic opportunities available.

There is potential through advice and funding to identify development opportunities which utilize the land resource base in accordance with its physical capability and degree of compatibility to surrounding land uses. As a result, there is a need to ensure that socio-economic opportunities funded are not at variance with the long-term capability of the

renewable resource base, or likely to cause soil degradation.

FPLU IMPLICATIONS:

This goal may be accomplished through development and incorporation of specific criteria based on the guidelines of the Federal Policy on Land Use into the existing review process for the funding of the development assistance projects.

MAGNITUDE:

Total program expenditures: $60,017,000 (1984-85 est.)
$58,094,000 (1983-84 est.)

Northern Affairs Program
Natural Resources and Economic Development Branch

IN.4. Northern Land Use Planning

DESCRIPTION:

The Department of Indian Affairs and Northern Development is responsible for the development and implementation of a comprehensive program of regional land-use planning to provide for the conservation and appropriate development and utilization of land, natural resources, inland waters and offshore areas in the Yukon and the Northwest territories. The Northern Land Use Planning Directorate coordinates and directs the policies and programs which determine the Department's land-use planning process. Once in place, the planning process will seek to resolve potential land-resource conflicts among developers, natives and conservation interests for northern lands.

Formal agreement to proceed with land-use planning in the Northwest Territories was achieved in June, 1984. Treasury Board approval of financial resources was received in May, 1985. In the Yukon, an agreement to proceed with land-use planning has been drafted and is expected to be formalized by July, 1986.

POTENTIAL LAND IMPACTS:

The federal government has constitutional responsibility for land-use planning in the North. It has chosen to institute a co-operative land-use planning process, which involves northern residents, native organizations and the territorial governments, as well as the federal government. A Northern Land Use Planning program has massive potential for the long-term allocation and management of northern renewable resource lands in a comprehensive, rational and phased manner. Such a planning program must consider the needs of local residents and native people, as well as territorial and national priorities, the land resource potential and environmental constraints. The planning program is expected to:

(1) facilitate economic development and environmental protection.

(2) ensure that land use coincides with its physical capability.

(3) promote the compatibility of land uses.

(4) improve the overall efficiency of land use patterns.

The program and related land policies could affect the intensity and diversity of activities which in turn have significant land impacts (e.g. mining, oil and gas exploration and extraction, etc.).

FPLU IMPLICATIONS:

Although there is broad acceptance of the northern land planning process, there is also a need for strong implementation to achieve the desired land-use objectives. It is important to note that resource-based information is fundamental to the decision-making and planning process, and should be part of the northern land-use planning process.

Resource-based environmental planning, pursuant to the guidelines of the Federal Policy on Land Use, should be central to the northern land-use planning process. The balance between concerns for socio-economic development and environmental as well as resource constraints is delicate in the North. Consideration of resource-based constraints must be fully incorporated into the northern land-planning process to minimize the potential for serious environmental damage, which would have economic repercussions for northern residents and Canada as a whole.

Northern Affairs Program
Natural Resources and Economic Development Branch

IN.5. Forest Resources

DESCRIPTION:

The Forest Resources Program is responsible for policies and initiatives to protect and manage territorial forest resources. It reviews applications for timber use pursuant to the Territorial Timber Regulations, issues timber permits and administers forest resource operations and projects. Territorial Timber Regulations apply to the cutting and removal of timber on all land north of 60°N, except Commissioner's lands. Federal forestry officers also administer territorial legislation in the form of Forest Protection Ordinances which deal with the burning of slash and debris during right-of-way clearing, burning permits and fire-fighting assistance. Management and protection of forest resources in the Yukon and Northwest territories are aimed at stimulating economic development and employment opportunities for northern residents.

POTENTIAL LAND IMPACTS:

Northern forest resource protection and management through enforcement of regulations can ensure that forest lands are used as a sustainable resource for the long-term economic benefit of northern residents. The development and administration of regulations can help to ensure that northern forest land is used according to its soil capability and within environmental constraints. For example, timber cutting can be restricted or cutting practices carefully managed in those areas most susceptible to erosion. Watershed protection, control of soil erosion and a sustained supply of timber are some of the important benefits resulting from the regulation and encouragement of sound forest management practices.

A sustainable wood supply is important for building materials and the employment provided through logging and sawmilling. However, forests may be more valuable in some areas of the North as a source of fuel wood and as habitat for wildlife, from which the native people derive meat and fur. Northern forest resource management and regulation may help to avoid land-use conflicts between, for example, forestry, recreation and wildlife uses. Northern forest research may provide a basis for management practices that consider land capability, soil characteristics and other environmental constraints.

FPLU IMPLICATIONS:

Northern forest regulations, management and research should reflect the policy statements and guidelines of the Federal Policy on Land Use. Criteria based on this policy should be incorporated into the forest regulation process.

MAGNITUDE:

Timber management:	$ 2 million (1984-85)
Fire management:	$20 million (1984-85)

Northern Affairs Program
Natural Resources and Economic Development Branch

IN.6. Northern Environment: Assessment and Studies

DESCRIPTION:

The Northern Environmental Protection Directorate develops environmental policies, objectives, standards and appropriate protection measures for federal lands in the Northwest and Yukon territories. This is accomplished through:

(1) identification of, management of and participation in applied environmental research and monitoring studies.

(2) assisting in the design and implementation of northern environmental management policies in support of the regulatory and institutional process used to promote northern development in an environmentally responsible fashion.

(3) providing technical support and advice on northern environmental issues to other government agencies, native organizations and industrial proponents.

(4) implementing the Federal Environment Assessment and Review Process (EARP) in the Northern Program.

Within the Directorate, the Terrestrial Environment and Marine Environment divisions ensure that the requirements of the federal Environmental Assessment and Review Process are carried out for projects within the responsibility of the Northern Program. This includes all projects on federal lands in the Northwest and Yukon territories. To achieve this, the environmental consequences of northern development proposals are evaluated through the coordinated efforts of regional and headquarters staff, interdepartmental evaluation and consultations with native organizations and industry proponents. Projects have included the Polar Gas Pipeline, Bent Horn Oil Development, Beaufort Sea Hydrocarbon Development, Norman Wells Oilfield and Pipeline and Yukon North Slope Development. The two divisions also provide advice on surveillance and monitoring requirements and on the adequacy of current environmental protection measures. As well, they recommend on policies for improved environmental protection. Environmental management in the North is implemented through detailed review of the potential environmental impacts of development projects and by attaching terms and conditions to permits, licences, etc. that are designed to minimize damage to the northern ecology. Enabling legislation includes the Territorial Lands Act, Northern Inland Waters Act, and the Arctic Waters Pollution Prevention Act.

The Directorate is responsible for evaluating and implementing recommendations from the Task Force on Northern Conservation, and conducts environmental research and monitoring studies aimed

at developing more effective environmental management practices. This includes the Northern Oil and Gas Action Plan (NOGAP; program #IN.13) which, through research, is providing the necessary information to develop and produce northern hydrocarbon resources.

POTENTIAL LAND IMPACTS:

By seeking to protect the environment through assessment, studies and development of regulations, the directorate can contribute to the maintenance of high environmental quality in the North. The program can thus influence the use and management of the land resource, and help to prevent the misallocation and degradation of land by development. Furthermore, it may ensure that environmental protection criteria are satisfied prior to the development of resource projects. Review of such projects (e.g., pipelines, highways, mining, oil and gas) can help to ensure that the needs of the communities affected, including traditional native uses of the land, are taken into account in project management practices. In addition, the conditions attached to permits and licences for development projects have the potential to assist in the protection of the environment, provided that environmental constraints and long-term renewable resource needs are incorporated into their formulation.

FPLU IMPLICATIONS:

Environmental assessment criteria for project review, as well as the regulations developed and conditions attached to project approval, should incorporate land resource concerns based on the guidelines of the Federal Policy on Land Use.

MAGNITUDE:

Not specifically available for the Northern Environmental Protection Directorate.

For the umbrella Northern Environmental Protection and Renewable Resources Program, expenditures were:	$46,220,000 (1984-85 est.) $43,608,000 (1983-84 est.)

INDIAN AFFAIRS AND NORTHERN DEVELOPMENT

Northern Affairs Program
Natural Resources and Economic Development Branch

IN.7. Environmental Studies Revolving Fund -- DIAND

DESCRIPTION:

The Environmental Studies Revolving Fund (ESRF) -- DIAND provides funds for environmental and social studies required to assist the Minister in making decisions regarding proposed oil and gas activities in the northern regions of Canada. The revolving fund is financed entirely by direct levies on the owners of oil and gas interests on frontier lands in the North. In order to be considered for funding from ESRF, the environmental studies must (1) be regional or national in scope, (2) complement government activities and (3) address decision-making issues clearly related to oil and gas exploration and development activities. (A parallel fund [ESFR -- EMR] supports similar studies in regard to frontier lands off the east and west coasts and in Hudson Bay. The operations of the two funds are closely integrated.)

POTENTIAL LAND IMPACTS:

ESRF studies provide environmental and socio-economic information to ministerial decisions that impact on the environment and resource use in the North, i.e. decisions that have the potential to affect the land resource. Environmental research and its subsequent application may contribute to:

(1) reducing the impacts of oil and gas exploration and extraction activities.

(2) improvements to land reclamation practices.

(3) closer monitoring of effects on environmentally sensitive areas.

In this way, the studies may help to avert temporary or permanent adverse effects on the environment and to conserve the land for other uses. Government decisions resulting from ESRF studies may influence the timing and location of exploration for oil and gas, and the ways in which these activities occur.

FPLU IMPLICATIONS

The review criteria for (1) the funding of environmental study proposals, and (2) the subsequent application of the study results, should specifically incorporate the concerns expressed in the policy statements and guidelines of the Federal Policy on Land Use.

MAGNITUDE:

Total disbursements (inc. administration):	$1,983,790 (1984-85)
	$ 392,796 (1983-84)
Payments for studies:	$2,886,000 (1985-86 forecast)
	$1,706,257 (1984-85)
	$ 280,182 (1983-84)

Northern Affairs Program
Natural Resources and Economic Development Branch

IN.8. Land Management and Water Resources

DESCRIPTION:

The management of inland and offshore lands and waters north of 60°N is accomplished through two divisions within the Branch -- Land Management and Water Resources. The Land Management Division is responsible for policies and legislation for the protection, conservation and disposition of surface rights in northern Crown Lands and the use of surface lands in the North, as well as the use and disposition of granular resources. Recently, an added dimension has been research and development of land management positions relative to native claims negotiations.

Disposition of interests in Crown Lands ensures that the needs of people and institutions living and conducting businesses in the North are met. Transfers of land in and around communities are made to the territorial governments for the purpose of community development. In addition, land for recreation and agricultural uses is made available as required. It is also transferred to other government agencies such as Parks Canada and Public Works, as well as to satisfy native land claim settlements. Leases and licences provide medium-term interest in lands for use by individuals or corporations.

The Land Use Section of the Division is responsible for regulating, approving and monitoring land-use operations taking place on territorial lands pursuant to the Territorial Lands Act. The Public Lands Grants Act regulates operation on the offshore seabed. Land-use permits and quarrying permits are the prime regulatory vehicles used to control exploration and development operations in the short term for operations such as road and pipeline construction, mineral exploration and petroleum exploration on land and offshore. Of prime concern is the protection of the natural environment. Careful consideration is given to formulating the precise terms and conditions appended to each permit to ensure this objective. Research and special projects provide support for the other land management functions by supplying information upon which to base new land management concepts, policies, legislation and operations for future adoption.

The Water Resources Division is responsible for the planning, conservation and management of northern inland and offshore waters by controlling and regulating water use, for example hydro-power developments, under the Northern Inland Waters Act and the Arctic Waters Pollution Prevention Act. Water management surveys and inventories provide supporting information for planning and policy decisions.

POTENTIAL LAND IMPACTS:

In the broad sense, Land Management Division is involved in the management of the surface of the lands and the lands under the waters for which it has direct responsibility. It also has responsibility for all the natural resources above, on and below the surface of the lands and the protection of the natural environment. Regulation and monitoring of major exploration and development projects by the Division, such as the Benthorn Oils project, Beaufort hydrocarbon exploration and Yukon North Slope development, are intended to ensure that the needs of northerners are taken into account and the integrity of the environment is protected. These projects could effect the natural environment substantially, so the regulatory process has been designed to provide close control through the use of terms and conditions appended to the operation approvals. Full-scale studies of the water and related resources of the Mackenzie River Basin and the Yukon River Basin by the Water Resources Division ensure that comprehensive resource utilization is possible.

FPLU IMPLICATIONS:

Review criteria, as well as the terms and conditions attached to approvals, should specifically incorporate the concerns expressed in the policy statements and guidelines of the Federal Policy on Land Use.

INDIAN AFFAIRS AND NORTHERN DEVELOPMENT

Northern Affairs Program
Natural Resources and Economic Development Branch

IN.9. Economic Development Agreements with the Yukon and Northwest Territories

DESCRIPTION:

The five-year economic development agreements negotiated with the Northwest Territories (to 1987) and the Yukon (to 1989) are designed to facilitate federal-territorial cooperation in undertaking the planning and implementation of economic and social development north of 60°N. Subsidiary agreements specify the programs to be undertaken and the cost-share arrangements to be borne by Canada and each territory. Initiatives aim to improve the economic circumstances of northern residents, mainly through contributions to the private sector.

The three subsidiary agreements with the Northwest Territories are aimed at the expansion and development of the domestic market and human resource sectors, and encouraging natural resource development. Specific projects will, for example:

- support the development of the fur industry, commercial fisheries and wildlife-based industry.
- seek funding assistance for resource inventories, studies and programs aimed at stimulating small business and tourism development.

The four subsidiary agreements signed in 1985 with the Yukon Territory include programs which, for example, provide for:

- promotion of renewable resource development, i.e. wildlife-based industries, sport and commercial fisheries, agriculture and resource inventories.
- feasibility studies and assessments of potential renewable resource markets.
- establishment of a framework to implement programs to expand and diversify the mineral resources sector.
- geological mapping and geochemical surveys.
- analyses of economic development in the medium and long term.
- promotion and development of the tourist industry.

POTENTIAL LAND IMPACTS:

Initiatives undertaken through economic development agreements have the potential to impact on land by influencing land-using economic sectors, i.e. agriculture, forestry, furs, tourism, fisheries, minerals and small business. In general, by stimulating the economic development of the territories, these agreements can affect the viability of various industries and land-using activities. Thus they can extend and intensify the use of land with resource potential and

require more comprehensive management of the land resource. Northern development may cause land allocation problems among different users, e.g. forestry, furs, and mineral development and, if appropriate conservation practices are not pursued, may cause land degradation. Most agreements, however, contain requirements and procedures for environmental assessment where concern exists.

An increase in economic activity also has successive multiplier effects commencing with creation of new jobs in the resource sectors. Enhanced employment opportunities can stimulate the housing and services sectors, which require land for building purposes and for supporting infrastructure, with implications for the need for land-use planning.

FPLU IMPLICATIONS:

The proper allocation and management of the land resource in the economic development process requires consideration of resource-based constraints and opportunities at the proposal review, planning and implementation stages of each project. In order to accomplish this, the guidelines of the Federal Policy on Land Use should be incorporated into each subsidiary agreement. More specifically, detailed project review and planning criteria reflecting the land resource concerns of the FPLU should be developed and applied to each project.

MAGNITUDE:

(1) Canada/Northwest Territories Subsidiary Agreements (1983-84 to 1986-87):

Subsidiary-Agreement	Federal Share	Northwest Territories Share	Total Cost
Domestic Market Development	$ 9,675,000	$1,075,000	$10,750,000
Human Resource Development	$ 5,013,000	$ 553,000	$ 5,570,000
Natural Resource Management	$ 4,212,000	$ 468,000	$ 4,680,000
TOTAL	$18,900,000	$2,100,000	$21,000,000

(2) Canada/Yukon Subsidiary Agreements (1985-86 to 1988-89):

Subsidiary-Agreement	Federal Share	Yukon Share	Total Cost
Renewable Resources	$ 3,800,000	$ 422,200	$ 4,222,200
Economic Development Planning	$ 599,200	$ 67,800	667,000
Mineral Resources	$ 3,501,000	$ 389,000	$ 3,890,000
Tourism	$ 8,000,000	$2,000,000	$10,000,000
TOTAL	$15,900,000	$2,879,000	$18,779,000

INDIAN AFFAIRS AND NORTHERN DEVELOPMENT

Northern Affairs Program
Natural Resources and Economic Development Branch

IN.10. Northern Mining Management

DESCRIPTION:

The Northern Mining Management Program is responsible for the development and implementation of legislation, policies and plans to promote the orderly management and development of mineral resources in northern Canada. Principal implementation activities include:

(1) the granting and maintenance of mineral rights north of 60°N.

(2) the collection of Crown revenues from northern mining.

(3) the collection and distribution of geological data relevant to northern mining.

(4) the review, planning and implementation of policies and regulations concerning the granting of mineral rights, mineral exploration and development, and the operation of mines north of 60°N.

(5) mine safety inspections in the Yukon.

(6) coordination and liaison with other government agencies, industry and other parties concerned with mineral development.

(7) monitoring agreements and projects.

POTENTIAL LAND IMPACTS:

The Northern Mining Management activity affects the land resource through its support and regulation of the northern mining industry, which can have a broad array of land-use impacts. Through its planning and implementation efforts, and subject to the limitations inherent in the land resource base, the program can influence the level and location of mineral exploration and development. It also affects mine operation practices, with consequences for surrounding land uses, resource conservation and the development of mining communities.

The mining industry can have a broad range of land-use effects in the North, some region wide, others site specific. Mining production may enhance the economic basis for other land uses, notably transportation and some industrial activities, and may foster the development of communities and transportation networks, especially in remote areas. However, extraction activities may displace other uses, for which the site may be equally or better suited, i.e. forestry, recreation or wildlife. Construction of facilities and subsequent operational activities for mineral exploration and extraction may damage environmentally sensitive areas and decrease the aesthetic value of the land, where appropriate planning and regulatory measures are

not followed or enforced. Placer mining, in particular, may affect the land and water resources of the area in which it is conducted. In summary, programs that affect the level and location of mining activity can have a variety of land-use consequences.

FPLU IMPLICATIONS:

The full range of land resource and environmental assessment criteria, pursuant to the Federal Policy on Land Use, should be developed and incorporated into the policies and regulations governing the granting of mineral rights, mineral exploration and development and the operation of mines north of 60°N. Placer mining, in particular, may require strong regulation with respect to the land resource.

INDIAN AFFAIRS AND NORTHERN DEVELOPMENT

Northern Affairs Program
Natural Resources and Economic Development Branch

IN.11. Northern Infrastructure Development

DESCRIPTION:

The Infrastructure Division develops policy pertaining to the infrastructure requirements of existing and potential natural resource and industry operations north of 60°N. Its policies are co-ordinated with those of other departments (e.g. Transport Canada) and with those of the territorial govrnments, which have responsibility for townsite development. It provides funds, planning and project leadership for the design and construcion of all new northern highways and for reconstruction works on inter-territorial roads, e.g. Dempster Highway, North Canol Road, Carcross-Skagway Road and Mackenzie Highway. In their activities, the Infrastructure Directorate utilizes the services of other government agencies, such as Public Works Canada and Transport Canada, as well as the territorial governments.

POTENTIAL LAND IMPACTS:

The planning, funding and management of northern road construction can directly affect regional land-use patterns, surrounding land uses and the specific site of construction. At the regional level, access for resource development stimulates further development of ancillary industrial, commercial and community uses, through the provision of the necessary transportation network for renewable resource and industry operations. At the site specific level, roads and other infrastructure require land; previous land uses will be permanently replaced or modified by road construction. But in its rewritten version mentions other types of infrastructure. The effects of permafrost degradation pose special construction problems in the North, requiring appropriate mitigative measures. In regard to surrounding land uses, the construction itself and the operation of a transportation network may cause serious degradation of the natural environment, with subsequent impacts on, for example, wildlife habitat.

FPLU IMPLICATIONS:

A full range of land resource and environmental assessment criteria and guidelines, pursuant to the Federal Policy on Land Use, should be developed and incorporated into (1) the site selection, planning and project management processes for construction of northern roads and (2) policies governing other infrastructure development.

MAGNITUDE:

Northern roads -- total program expenditures:	$16,800,000 (1985-86 est.)
	$26,810,000 (1984-85 est.)
	$24,003,000 (1983-84 est.)

Northern Affairs Program
Natural Resources and Economic Development Branch

IN.12. Northern Oil and Gas Management and Major Resource Projects

DESCRIPTION:

The Northern Oil and Gas Management and Major Projects Directorate develops legislation, policies and plans to promote and regulate the orderly exploration, management and development of oil and gas resources in northern Canada, and provides policy direction to the Canada Oil and Gas Lands Administration (COGLA; program #IN.14). The Directorate is the focal point within the federal government for the forecasting, planning and management of major northern development projects. Integrated assessments are carried out. Once projects are approved, the Directorate coordinates their implementation ensuring that comprehensive terms and conditions are developed and applied.

Management responsibilities include the evaluations and advice to COGLA respecting authorization of oil and gas drilling and production, oil and gas reservoir construction, and pipeline programs. The conservation of resources and safety of personnel is of primary consideration in this process. The Directorate also monitors all operations for compliance with imposed terms and conditions. In addition, it monitors the enforcement by COGLA of the Oil and Gas Production and Conservation Act and related regulations, the Canada Oil and Gas Drilling Regulations, and the proposed Canada Pipeline and Production Regulations in the north.

POTENTIAL LAND IMPACTS:

Land impacts resulting from this program are associated with the exploration, development and management of oil and gas resources in the North. These impacts are discussed under COGLA.

Northern Program
Constitutional Development and Strategic Planning Branch

IN.13. Northern Oil and Gas Action Program (NOGAP)

DESCRIPTION:

The Northern Oil and Gas Action Program (NOGAP) was approved in 1984 as a seven-year (1984-85 to 1990-91) research and planning program, subject to review in late 1987. NOGAP is derived from the first facet of the federal government's northern hydrocarbon development strategy: to implement a federal/territorial coordinated and accelerated socio-economic, environmental and technical research and planning program to support government regulatory, policy and program responsibilities, in order to achieve a state of preparedness for hydrocarbon production north of 60°N by 1991.

Both territorial governments and seven federal departments are funded under NOGAP, including Agriculture Canada; Energy, Mines and Resources; Environment Canada; Fisheries and Oceans; Indian Affairs and Northern Development (DIAND); the National Museum of Man; and Transport Canada. DIAND is responsible for overall program management. NOGAP funds may be used either to accelerate work on current research projects or to undertake new activities, which existing ("A"-base) resources cannot accommodate. Projects are proposed by NOGAP participants to support their needs for accelerated research and planning relevant to northern hydrocarbon development.

NOGAP work is based on three priorities, as follows:

(1) initial work -- concerned with first-order protection, prevention and delineation measures; e.g. development of environmental guidelines and criteria, hydrographic surveys to permit safe navigation.

(2) longer-term work -- e.g. baseline data collection, socio-economic studies, monitoring activities.

(3) later work -- items that either should be done only when details of hydrocarbon production are more firmly known, or are not seen as absolute constraints to hydrocarbon production, e.g. sea air quality assessment techniques, economic analysis, policy development.

POTENTIAL LAND IMPACTS:

NOGAP's research and planning activities are to advance the state of governmental preparedness for major northern hydrocarbon development. Decisions based on information provided by NOGAP could prevent or minimize the adverse effects of oil and gas development on the land resource. Application of NOGAP research findings may assist with improvements to exploration, extraction

and land reclamation techniques, and with the monitoring of environmentally-sensitive areas. NOGAP helps to lay the research and planning groundwork for the commercial production and transportation of oil and gas in the North. Thus, NOGAP may contribute to the economic development of northern Canada, which will have consequences for the intensity and types of land use and community development.

FPLU IMPLICATIONS:

It is important for the program to ensure that its information products, studies and recommendations are widely available in a form that is useful to both public and industry decision-makers. The concerns of the Federal Policy on Land Use should be reflected in the types of research undertaken, and more specifically, in the recommendations and environmental guidelines resulting from them.

MAGNITUDE:

First four years: $48.5 million

SOURCE: NOGAP Secretariat.

Related Agency that Reports Through the Ministers of Indian and Northern Affairs and Energy, Mines and Resources

IN.14. Canada Oil and Gas Lands Administration (with EMR)

DESCRIPTION:

The Canada Oil and Gas Lands Administration (COGLA) is the prime federal regulatory body responsible for activity associated with the exploration and production of petroleum resources in the Canada Lands, an area comprising 6.4 million square kilometers in the Arctic and the eastern and western offshore, and 3.8 million square kilometers in the Yukon and the Northwest territories.* It reports to both DIAND and Energy, Mines and Resources.

COGLA's responsibilities involve the disposition and administration of oil and gas rights and the regulatory approval of oil and gas exploration, development and production, as well as contingency planning, compensation and benefits plans for oil spills. Specific activities include (1) the assessment of oil and gas resources in the Canada Lands, (2) the dispostion of oil and gas rights to industry, (3) the inspection and monitoring of oil and gas operations for reasons of operational, occupational and environmental safety, conservation and environmental protection, (4) the collection of royalties and other revenues, (5) undertaking of applied research on oil and gas issues and (6) co-ordination of interdepartmental, intergovernmental and industrial cooperative resource management efforts. In summary, COGLA is responsible for the administration of legislation and supporting regulations, guidelines and standards for the sound management of oil and gas development in the North.

On January, 6, 1986, the Canada-Newfoundland Offshore Petroleum Board (CNOPB) assumed the functions and operations of COGLA for offshore Newfoundland and Labrador as defined in the Atlantic Accord. The Accord is a federal/provincial agreement on the joint management of petroleum resources and revenue sharing. The CNOPB is now responsible for all matters related to the management of petroleum resources in this region.

POTENTIAL LAND IMPACTS:

COGLA's regulatory activities influence oil and gas exploration and development north of 60°N and in the eastern and western offshore areas, both influencing and protecting northern and coastal land uses. Hydrocarbon development can have a wide range of land-use effects; some region wide, others, site specific. Oil and gas exploration and development may serve as an

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* Includes area under responsibility of Canada-Newfoundland Offshore Petroleum Board. See paragraph #3.

economic stimulant for other land uses, notably transportation, construction and refining activities, and may stimulate the development and expansion of urban communities and transportation facilities. Conversely, poorly controlled oil and gas exploration and development can temporarily or permanently displace other activities for which land is well suited, i.e. forestry, recreation, hunting and trapping or wildlife conservation areas. The cutting of seismic lines, the constructing of airstrips and access roads, drilling operations and other related construction and operational activities for petroleum exploration and production may have significant impacts on wildlife habitat, wildlife migration routes and environmentally-sensitive areas in the North.

FPLU IMPLICATIONS:

As a result, there is a need for COGLA and related regulatory agencies, such as the Canada-Newfoundland Offshore Petroleum Board, to develop and enforce regulations and environmental guidelines that minimize the adverse consequences to northern renewable resources and the environment from oil and gas industry activities. In the formulation and application of the necessary regulations, consideration should be given to the policy statements and guidelines of the Federal Policy on Land Use.

MAGNITUDE:

$8,741,000 (1984-85 est.)
$5,958,000 (1983-84 est.)

Defence Services Program

ND.1. Construction and Acquisition of Land, Buildings and Works

DESCRIPTION:

Under the National Defence Act, the Department of National Defence (DND) is responsible for all matters relating to national defence. The responsibilities of the Canadian Forces element of DND include (1) the surveillance of our territory and coastlines (protection of sovereignty), (2) the defence of North America in cooperation with US forces, (3) the fulfillment of NATO commitments and (4) the performance of international peace-keeping roles. For the on-shore portion of its responsibilities, DND owns and leases over 1,900,000 ha of land in Canada. Such land is used for forces bases, training areas, bombing ranges, radio sites, supply and repair depots, research labs and a variety of other purposes. Most proposals for the acquisition, development or disposal of DND property originate from operational requirements. Responsibility for land-use and development is divided between the HQ Properties and Utilities unit with respect to policy, negotiation and acquisition, and the Construction Engineering section for the development and implementation of approved land-use proposals or transactions. Defence Construction Canada, a Crown Corporation, is the contracting and construction-supervisory agency for major construction and maintenance projects of DND.

Freehold interest in real property is acquired by DND through (1) purchase, exchange or gift and (2) expropriation of outright ownership or a limited interest such as an easement. DND major land acquisition proposals are referred to the Treasury Board Advisory Committee on Federal Land Management (TBAC/FLM; program # TB.1), whose approval is required for some purchases and all exchanges. Leasehold interest in property is usually acquired by DND through (1) negotiation of a formal agreement or (2) a reservation or transfer of limited control or use from another federal department or a provincial government. Expropriation would be used only if (1) there were a need to avoid speculative influences, (2) an impasse were to arise in purchase negotiations or (3) title to the land were indeterminable. Generally, the large tracts of land required for DND use are only available as provincial crown land.

In addition to the Expropriation Act, other statutory powers are available to DND in respect of the taking of real property under the National Defence Act, the War Measures Act and the Constitution Act (formerly the British North America Act). Leasehold interest or personal rights in respect of Crown-owned DND property may be granted to private persons and organizations, or other departments and agencies, in the form of leases, leave and licence or similar agreements. Requests for occupancy or use of DND property are investigated by the local base, but authorized by Headquarters.

POTENTIAL LAND IMPACTS:

DND land acquisitions for new bases, firing ranges, etc. are made as operational requirements arise. Due to (1) the nature of concerns that have been expressed vis-à-vis existing facilities, and (2) the rapidly changing field of warfare technology and its associated needs for testing and practising, acquisitions or major changes in use need to include mitigation of land-related concerns in the process of new site selection. Noise from military equipment and firing ranges, recreational demands and safety from such operations are the principal concerns expressed. A recent attempt to acquire a new training area in Alberta raised environmental concerns as well. DND is aware of these concerns and airs them through public discussion of its plans. This approach is continuing to ensure that all significant factors are weighed in the selection of any new site or in proposals seeking to change the use of existing sites.

Development activities on existing or new sites may lead to impacts off the site(s). For example, new facilities can generate requirements for roads, schools, housing and other commercial services, as well as infrastructural works such as sewers, waterlines and roads, which would link to local municipalities. Cooperation between DND and local municipalities is essential in providing mutual benefits in terms of new infrastructure development, new services and coordinated land-use planning.

FPLU IMPLICATIONS:

DND has procedures in place to ensure compliance to the guidelines of the Federal Policy on Land Use for all transactions. This occurs principally through application of the Federal Environmental Assessment Review Process and/or similar provincial requirements (in the case of reservations of provincial crown land). All significant acquisition, sales, closures and major land-use changes are thus reviewed for social, environmental and economic impacts. Extensive procedures for consultation with the public and local and provincial governments are also in place.

MAGNITUDE:

Capital expenditures for construction and acquisition of land, buildings and works (DND):	$173,723,000 (1984-85 est.) $111,139,000 (1983-84 est.)
Defence Construction Canada -- expense of procuring the construction and maintenance of defence projects·	$ 14,500,000 (1984-85 est.) $ 12,885,000 (1983-84 est.)

Defence Services Program

ND.2. Management of Defence Installations, Bases and Military Ranges

DESCRIPTION:

The purpose and extent of National Defence land holdings have been discussed previously (program # ND.1). Under Department of National Defence (DND) management policy, it is the responsibility of the Base or Station Commander to ensure that the lands under his control are not encroached upon by unauthorized individuals or organizations. Boundaries are checked regularly and on-foot inspections are carried out at least once every three years by the base responsible for the property. This survey is to ensure that the Crown's ownership is not being infringed upon, that property boundaries are properly defined and that DND installations do not encroach upon the property of others.

For military reasons, defence installations, bases and military ranges are often managed as self-contained, autonomous units. Much of the necessary housing, retail, institutional and recreation facilities necessary for personnel are provided on site. Much military land is closed to the public for reasons of safety (e.g. undetonated ammunition) or national security. On the other hand, portions of bases such as CFB Petawawa, Suffield, Gagetown and Tracadie are currently used for other resource purposes. These include forest management, resource extraction (e.g. petroleum, aggregate), grazing, recreation and wildlife habitat. For example, some bases represent significant wildlife refuges (e.g. pronghorn antelope at Suffield, mule deer and elk at Shilo, bison at Wainwright and waterfowl at Nicolet).

The Directorate of Conservation and Environment is responsible for monitoring all the land management activities of DND to ensure that physical environmental concerns are addressed. The Directorate ensures that DND complies with all requirements of the federal Environmental Assessment and Review Process, and performs the necessary liaison with federal, provincial and municipal environmental authorities and the public.

POTENTIAL LAND IMPACTS:

Management of land for some military purposes of necessity isolates it from surrounding communities, rendering it unavailable for other or multiple uses. Noise generated by the operation of military vehicles or aircraft or the need for safety from weapons ranges periodically lead to complaints from the surrounding residents or nearby communities. These are generally unavoidable, unless extensive buffer zones are put into place. Some military land has been contaminated by wartime activities (e.g. unexploded ammunition) and cannot be

rehabilitated. These lands are retained by DND so far as possible (i.e. when they are federally-owned). Military training activities which inevitably contaminate land are confined to these areas, in order that no additional land be lost in this way.

A large DND base near a small community usually provides a wider range of recreation and institutional services than were previously available in town, and is generally a major employer of civilians. Local services are increasingly required since DND is in the process of turning over its service needs (e.g. water, schools, stores) to local municipalities and free enterprise. A drastic change in the size of a DND base can severely impact on employment, the economy and land use of communities nearby (e.g., proposed reductions at Chatham, N.B.). Extensive local consultations are used to attempt to mitigate such situations when they arise. Committees have also been established to assist in preparing sites for abandonment (e.g. Pinetree line radar stations -- removal of PCBs and radioactive wastes) and for disposing them to private concerns for other uses where possible.

An important aspect of land management is the implementation of measures and regulations to protect, to the extent possible, the natural environment. Military manoeuvres can affect extensive areas of forest, wildlife, etc.. DND operational procedures which protect renewable resources are reviewed periodically. Local environment advisory committees have been set up to advise commanders at some major bases (e.g. Gagetown). The Department's land management processes contain standard criteria and measures designed to protect the physical environment. It also solicits the aid and advice of other federal agencies (e.g. Canadian Wildlife Service, Ministry of State for Forestry) regarding resource-specific problems, as required.

FPLU IMPLICATIONS:

This program thus has in place functional procedures to ensure compliance with the Federal Policy on Land Use.

NORTHERN PIPELINE AGENCY

Agency that Reports Through a Named Minister

NP.1. Canada-Alaska Highway Gas Pipeline

DESCRIPTION:

The Northern Pipeline Agency is a regulatory body created to oversee the planning and construction of the Canadian portion of the Alaska Highway Gas Pipeline Project by the Foothills Group of Companies. This project is a large diameter pipeline system designed to transport natural gas across Canada from the North slope of Alaska to the lower 48 states of the US. Provision is made in the design to accommodate Canadian gas from the Arctic region as required.

The agency was designed to administer the many federal acts which apply to the construction of the pipeline in Canada. Its objective is to facilitate planning and construction of the Alaska Highway Gas Pipeline at the lowest possible cost -- economically, socially and environmentally. Socio-economic and environmental terms and conditions are established through extensive consultation with other levels of government and various interest groups (e.g. land claim holders), and serve as the basis for review of plans submitted by the construction company. Thereafter, the Northern Pipeline Agency monitors compliance with the approved plans. It thus attempts to enhance economic benefits, and reduce the adverse impacts on people and the environment along the pipeline route. The Northern Pipeline Agency is also responsible for continuing liaison with the provinces and territories involved, in order to coordinate between levels of government and between Canada and the United States.

Prebuilding of the southern segments of the pipeline was completed in 1982 and these segments are currently used to export Canadian gas to the US midwest and California. Expectations are that the remaining northern segments will be constructed by the early 1990s.

POTENTIAL LAND IMPACTS:

The construction of the pipeline may encourage the exploitation of energy resources in the Arctic and enhance gas production in northern Canada, thus serving as the economic basis for other land uses, notably transportation and related service activities. Operation of the pipeline may also promote the development of communities and transportation networks in remote northern areas, with potential for longer-term development opportunities and changes in land use. However, the gas pipeline may also prove to be disruptive to indigenous land uses and to the unique northern natural environment. In addition, a construction project of this magnitude will cause physical alterations in the land resource through changes in stream patterns, flooding, soil removal, silting, etc.. These activities and results can permanently disrupt

environmentally sensitivie areas, including wetlands and northern tundra, with consequent effects on animal migrations, hunting, trapping and tourism.

The Northern Pipeline Agency can potentially prevent or mitigate disruptive impacts on land by selecting, insofar as possible, a route located away from communities, hunting and fishing areas, wildlife migration routes, scenic features, environmentally sensitive areas and unstable geologic features. Proper planning, design and engineering, together with continued monitoring of construction and pipeline operation, can help to ensure that local environmental problems at sites along the route are addressed. If monitoring and review are sufficient and effective, the Agency can assist in reducing the risk in transport, and the disruption to surrounding land uses and economic activities. The agency has already developed terms and conditions for development, and undertaken the review of construction plans and on-site inspection procedures.

MAGNITUDE:

Northern Pipeline Agency	$3,524,000 (1984-85)
Program expenditures:	$5,414,000 (1983-84)

PW.1. Accommodation Program

DESCRIPTION:

The Accommodation Program provides departments and agencies of the federal government with accommodation through the construction, leasing and marketing of space, and ensures the optimal utilization of this space. It is also responsible for the development of accomodation and real property management policies, systems and procedures.

The program provides all the necessary building design and construction services. Accommodation standards are developed in accordance with program objectives. For instance, design standards are set to ensure energy efficiency in new and existing structures, accessibility for handicapped people and the preservation of heritage structures. Through the Accommodation Program, the Department of Public Works (DPW) plans and initiates improvements to federal assets. It also operates, maintains and manages accommodation, provides real property management advice and maintains a complete and current inventory of all real property owned or leased by DPW to satisfy this program.

POTENTIAL LAND IMPACTS:

The Accommodation Program can affect the use and management of properties, surrounding land use and local land market through decisions and practices re: land allocation, site design, construction, the timing and size of building space acquisition and disposal and the maintenance of a property inventory.

In allocating land and buildings to accommodate demands of the federal government, the program can have many land-use effects. Through appropriate location criteria, there is the potential to avoid renewable resource lands, such as high capability agricultural land. Locations development by the Accommodation Program can help to support local land planning and zoning or run counter to it. DPW development can support local transport and land-use policies, be it employment decentralization or strengthening of the central core, by locating activities to encourage the use of public transit, facilitate downtown redevelopment or preserve heritage buildings.

Through appropriate site design and location criteria, DPW can help to ensure that federal accommodation is provided within the available capacity of local infrastructure and services, such as sewers, roads, schools and retailing. Among other factors, architectural design can help avoid the "wind tunnel" effect of high-rise buildings, provide sufficient open space and parking areas, as well as appropriate access to local streets. Depending on timing of the

acquisition, and size of the property in question, DPW transactions significantly affect local land values and leasing rates for space. Significant construction projects undertaken by DPW in urban areas can also cause significant temporary traffic diversions with subsequent impacts on the surrounding area (i.e. noise, loss of time, etc.).

FPLU IMPLICATIONS:

Compatibility to surrounding land uses needs to be a key consideration of the Accommodation Program, since a significant portion of federal office accommodation is located in the central core of urban areas. Compatibility to surrounding uses should be ensured, for example, by following local land-use zoning, locating within office, industrial or commercial areas as appropriate and avoiding residential areas. Excessively high buildings in low-rise areas should be avoided. Oversized accommodation in small communities should be minimized or carefully monitored with respect to the effects on housing and other services (e.g. as has been done in Charlottetown, PEI). As well, DPW has to be careful with respect to the impact of its building and space acquisition and disposal on the local real estate market.

In its role as the builder/developer/manager of federal real property, DPW has the responsibility to ensure that the Federal Land Management Policy and objectives are applied to the acquisition and disposal land on behalf of its client federal departments and agencies. Regulations, procedures and guidelines regarding the acquisition, disposal, construction and management of federal real property should also comply with the policy statements and guidelines of the Federal Policy on Land Use.

MAGNITUDE:

Total Program Expenditures: $605,393,000 (1985-86 est.)
$593,698,000 (1984-85)

PW.2. Federal Land Development and Management Activity

DESCRIPTION:

The Federal Land Development and Management (FLDM) activity provides an advisory and implementation capability for management of federal lands and holdings. The Central Real Property Inventory contains a record of property owned and leased by all federal departments and agencies. FLDM manages designated properties (e.g. official residences, Goose Bay, etc.) and those declared surplus. The activity also develops and disposes of surplus and underutilized properties, including preparation of studies and plans. This may be done by contributions to municipalities and provinces under Economic and Regional Development agreements (ERDAs).

Through the Land Management and Development Program, the Department has contributed financially using federal-provincial subsidiary agreement to the development of Saint John Market Square, the Shubenacadie Canal in Dartmouth, NS, the core area of Moncton, NB and infrastructure in Sault-Ste-Marie, Ontario. Other major contributions to redevelopment are taking place in Chicoutimi, Trois Rivières and Welland.

Finally, FLDM supports the Treasury Board Advisory Committee on Federal Land Management by land use and socio-economic impact studies associated with the acquisition, disposal and reutilization of properties. These studies are presented as Area Screening Canada reports or Federal Land Management reviews.

POTENTIAL LAND IMPACTS:

Decisions on how, when and where to acquire or dispose of land for federal purposes through the Land Management and Development Program can influence the use of the site, the surrounding land uses and the local land market. In the acquisition and development process in rural areas, previous land uses such as agriculture, forestry or recreation are likely to be displaced, though they may have been better suited to the physical capability of the land resource.

The development of federal property through the Program can serve as a stimulus for development in a community, creating more jobs and having consequent economic impacts on various land-using sectors (i.e. residential, commercial and institutional). If the development is sensitive to local planning goals, it can serve as a strategic tool for land planning in cooperation with the local governments, thus facilitating, for example, downtown redevelopment, heritage preservation or other community objectives. Projects like Saint John Market Square, for example, may serve as a catalyst for downtown revitalization and redevelopment, and provide wide array of shopping, convention and tourist facilities. Federal development, however, can also run counter to local planning objectives, in which case land-use conflicts may arise. Loss of a federal property can

also be damaging to a town dependent on the federal jobs and revenues spent locally, with consequences for local businesses, services and land use, unless the federal government and local officials carefully plan for a gradual transition phase.

FPLU IMPLICATIONS:

Program decision-makers have to consider carefully compatibility with surrounding land uses at the planning stage, in order to avoid conflicts between federal and nearby land uses. Moreover, decisions to dispose of federal lands should consider the option, where feasible, of returning land parcels in rural areas to renewable resource uses (e.g. a former experimental farm may be sold for crop or pasture uses). Disposal of a federal property could also be the key to strategic urban development in a city. Finally, the sale or purchase of large tracts of land for federal purposes has to be carefully orchestrated to avoid depressing or inflating prices in the local land market.

Criteria and standards applied to make decisions on the acquisition, development and disposal of federal property should incorporate the policy statements and guidelines of the Federal Policy on Land Use.

MAGNITUDE:

Activity expenditures: $53,939,000 (1985-86 est.)
$67,579,000 (1984-85 est.)

PW.3. Municipal Grants Program

DESCRIPTION:

The Municipal Grants Program provides grants to local taxing authorities across Canada (i.e. municipalities, school boards, provinces or territories) in lieu of taxes on federal government property. These grants are made by the Minister of Public Works out of the Consolidated Revenue Fund on receipt of an application. Nearly all land and buildings of federal departments are subject to grants, with certain exceptions including Indian Reserves and urban parklands. Structures other than buildings are not eligible for grants. Grants are not made in respect of federal property leased to or occupied by a third party, although certain properties are eligible by regulation.

Property now eligible for a 100% grant in lieu of property taxes includes libraries, historic sites, historic parks, the Houses of Parliament, reclaimed lands, water conservation and irrigation projects and PFRA pasture lands. In addition, national parks, museums, art galleries, concert halls and administrative and operational buildings on defence bases in rural areas became eligible for grants for the first time in 1980, although such grants were phased in progressively at 25% per year between 1980 and 1983.

POTENTIAL LAND IMPACTS:

Funding through the Municipal Grants Program should assist municipalities in providing and maintaining services to federal properties e.g. infrastructure, roads, sewers, water etc.. It also provides municipal services to the wider community in which the facility is located and in which government employees reside (e.g., schools). It has been observed in the past that the grants program did not cover sufficient federal properties, was not high enough to offset the loss of property taxes to municipalities and was not increased on a regular basis. Thus, other properties in the local community had higher taxes or received reduced local services. Changes in the eligibility criteria in the Municipal Grants Act, 1980 may alleviate some of these problems, and ensure a fairer level of revenue to the municipality. In counterpoint, others have suggested that many federal properties provide wider community benefits in terms of employment, services, parklands, etc., and therefore need not provide grants equal to the level of local property taxes.

FPLU IMPLICATIONS:

Eligibility criteria and levels established for grants should be in accordance with the policy statements and guidelines of the Federal Policy on Land Use which require the federal government

to take local, regional and provincial concerns into consideration to ensure that federal influence on land is positive.

MAGNITUDE:

Grants to municipalities:	$286,000,000 (1985-86 est.)
	$258,500,000 (1984-85 est.)
	$231,000,000 (1983-84)

Related Agency that Reports Through the Minister of Public Works

PW.4. Canada Lands Company (Mirabel) Limited

DESCRIPTION:

The Canada Lands Company is a corporate structure under which subsidiary Crown Corporations have been established and assigned management and development responsibilities for the properties involved, under agreement with the Minister of Public Works. The Canada Lands Company (Mirabel) Ltd. is one such subsidiary. Originally the company was formed to administer and manage the Mirabel Peripheral Lands to maintain a normal living environment for the inhabitants while protecting the operations of the Mirabel Airport. The company now has the mandate to prepare and implement a plan for disposal of those lands no longer required as a buffer for the operational requirements of the airport. (Preference is given to original owners.) Canada Lands Company (Mirabel) Ltd. manages approximately 38,800 ha, of which 8,000 ha are owned by Transport Canada. Major uses of these lands in terms of area occupied are agriculture and forestry, followed by residential and commercial and some recreational.

POTENTIAL LAND IMPACTS:

A large expanse of improved agricultural land, much of it CLI classes 1 and 2 in agricultural capability, was acquired for Mirabel Airport in order to protect its operations from the encroachment of urban development. It also provided a largely uninhabited "noise zone," as well as land for complementary industrial development and services. Existing farmland use was extensively disrupted. Much of this is now considered significantly in excess of requirement for the airport and is being disposed of by the Company through selling the land, primarily to the original owners.

Leasing arrangements to date may have reduced the productivity of existing uses such as agriculture, since tenants are not encouraged to make long-term investments in the farm operation or practice soil conservation. The initial land acquisition and subsequent leasing arrangement may have also tended to break down previously stable farm and rural communities. Nevertheless, agriculture and forestry remain the principal users of the land.

The re-sale of Mirabel lands by the company may put some areas back into permanent agricultural production by encouraging long-term investment. However, this will only take place if the land is bought back by bona-fide farmers. If the land is purchased by non-farmers or absentee owners, it may lie idle or underutilized, or be developed for more intensive uses that are

incompatible with agriculture and forestry. The sale value established by the company for the land is an important decision factor and will influence the use for which land is purchased.

FPLU IMPLICATIONS:

Pursuant to the policy statements and guidelines of the Federal Policy on Land Use, the Canada Lands Company (Mirabel) should co-operate with the Province to ensure that land-use plans and zoning are in place to require that the high capability resource lands near Mirabel are, as much as possible, maintained in agriculture and forest uses and in management units of viable economic size.

MAGNITUDE:

Operating and Capital Expenditures:	$8,656,000 (1985-86 est.)
	$9,680,000 (1984-85 est.)
	$8,975,000 (1983-84 est.)

RE.1. Industrial and Regional Development Program

DESCRIPTION:

The Industrial and Regional Development Program (IRDP) is one of the major programs of the Department of Regional Industrial Expansion (DRIE). The program was introduced in July, 1983 as one of the federal government's principal programs to deliver direct assistance to private sector firms. The objective of the IRDP is to promote regional industrial development through the support of private sector initiatives with particular emphasis on projects, industries and technologies with the greatest potential for economic return, sustained growth and international competitiveness. Seven former ITC and DREE programs have been incorporated into IRDP, including: Enterprise Development Program (EDP); Regional Development Incentives Act (RDIA); Support for Technology Enhanced Productivity (STEP); Co-operative Overseas Market Development Program (COMDP); Industrial Assistance Program (IAP); Montreal Special Area Program; and Magdalen Islands Special Area Program.

The program makes financial assistance available to business and non-profit organizations through contributions or repayable contributions. IRDP provides a range of financial support covering the major phases or elements of a typical corporate development cycle -- innovation, establishment, modernization or expansion and marketing. Accordingly, a wide range of projects may be eligible for support under the IRDP including feasibility studies, product and process innovation, marketing, new plant establishment and modernization or expansion of existing plant facilities.

Although the program is national in scope, financial assistance is available in all regions of Canada based on tier groups into which census divisions are classified. There are four tier groups: Tier I to Tier IV. Financial assistance under the IRDP is scaled in proportion to the tier in which the eligible project falls, i.e. the higher the tier level, the greater the maximum possible assistance. Tier group designations are assigned according to a "development index" which is a measure of economic disparity in the country based on income, unemployment and provincial fiscal capacity indicators as provided by Statistics Canada for 260 of Canada's census divisions.

Commercial operations consisting of manufacturing or processing activities are eligible for support under IRDP. They may apply under the innovation, establishment and modernization/expansion elements of the program. Also eligible under IRDP are non-profit organizations engaged in activities which provide support for commercial operations; they can apply under the innovation and marketing elements of the program.

POTENTIAL LAND IMPACTS

By supporting the establishment, modernization or expansion of manufacturing and processing facilities, the IRDP can cause a broad range of land effects. First, the program affects the amount and type of land used by manufacturing and processing firms. More broadly, it can result in successive economic multiplier effects starting with the maintenance or creation of new jobs. The maintenance or increase in employment within a community through IRDP assistance stimulates the housing and services sectors which require land for building purposes. IRDP assistance, if targeted to resource based industries which use agriculture or forest products as raw materials, can help to maintain the land resource in long-term sustainable production.

IRDP assistance can affect regional economies differently, depending on their economic health. IRDP funding may prove to be a stimulus to a declining region if the incentives favour the appropriate long-term industry. In an economically robust area, however, further industrial expansion may 'overheat' the local economy causing a development boom with inflated land prices and shortages of housing and services. Since the major objective of the program is to target industrial growth and development to less developed regions, this is theoretically a low risk impact.

The location of industrial activities impacts on local land-use patterns. If local land planning is not stringent, industry may remove land from agriculture, forestry and other uses in locating on the edge of urban centres. In addition, the disruption of existing land resource uses may be increased if industrial expansion takes the form of strip development along major roads or dispersed development throughout the urban fringe. The location of industry can also impact on adjacent land uses, influencing traffic patterns and land values, and requiring the expansion of infrastructure facilities.

FPLU IMPLICATIONS:

The analysis of applications for financial assistance to industry should ensure that FPLU guidelines are met, and that industrial expansion takes into account resource-based constraints, surrounding land uses and the local community. In this way, the adverse consequences of industrial expansion on adjacent land uses can be reduced while retaining the economic benefits of the expansion. It can also help to control and mitigate the land-use effects of industrial wastes (i.e. contamination of the resource base, pollution, etc.).

MAGNITUDE:

Total funding: $200,000,000 (1985-86 est.)
$418,083,794 (1984-85)
$ 82,495,905 (July, 1983-March, 1984)

RE.2. Tourism Program: Tourism Product Development and Tourism Marketing

DESCRIPTION:

Tourism Canada (TC) is an industrial sector branch of the Department of Regional Industrial Expansion (DRIE). Its mandate is to ensure that federal government activities (1) contribute to the development of an internationally competitive Canadian tourism industry, (2) lead to increased investment and employment in the industry and (3) help to reduce the tourist trade deficit. Tourism Canada functions include: research, analysis, planning, advocacy, investment stimulation and the influence of financial assistance programs. It also produces information/publications for the private sector on productivity improvement and the upgrading of facilities and services. TC maintains close contact with the tourism industry at the national level and through DRIE regional offices. It also works closely with provincial and territorial tourism departments.

Tourism Canada provides services to the Canadian tourism industry through three main branches -- Tourism Product Development, Tourism Marketing and Policy, Analysis and Liaison (Corporate Affairs/Research). The Tourism Product Development Branch is responsible for creating an environment within which the Canadian tourism industry can effectively operate, expand, develop new products and services in response to the changing market demand, and can compete using Canadian products and services in the international marketplace.

The Tourism Marketing Branch assists industry in competing more effectively in the international marketplace and participates in developing new markets for existing and new Canadian tourism products. Of particular importance is the design of marketing programs to attract visitors from the United States. Outside Canada, the responsibility for delivery of the tourism program rests with the Department of External Affairs. Its Commercial and Economic Section works in close cooperation with Tourism Canada from offices in more than 100 embassies and consulates throughout the world.

The Policy, Analysis and Liaison Branch gathers data and commercial intelligence, provides policy analysis and produces and distributes information useful to the industry in decision-making in support of the other two branches.

POTENTIAL LAND IMPACTS:

Tourism marketing maintains visitation levels and attracts new tourists to Canada. Product development stimulates the private and public sectors to upgrade and expand products and services and to invest in the necessary facilities and infrastructure in response to the market. Most major tourism developments are located in or within easy access of large urban centres and

adjacent to main transportation corridors. All tourism operations, in particular those in more remote areas, are subject to provincial and/or local environmental regulation.

The development of tourism sites and the encouragement of domestic and foreign tourism may have impacts on the land resource. Canada offers significant opportunities to earn more revenue from tourism. These provide strong incentives for business development, investment and creation of new jobs for Canadians. Thus, tourism offers the opportunity to broaden/diversify the economic base of many communities and regions.

Tourism operations and development activities may also negatively impact on the land resource (e.g. wildlife habitat, fragile ecosystems such as sand dunes or the Arctic tundra). In addition, designation of natural areas for public tourism and recreational use may preclude their use for other purposes, such as forestry, private recreation or extraction of mineral resources. However, the degree and type of land-use impacts depend on the quality and level of land planning, management and control applied in the tourism sites and surrounding areas.

The provision of recreation-based tourism facilities or activities may trigger intensive development of land areas. Through financial and other forms of assistance, destination resorts (especially alpine ski areas) have been developed. These have direct impacts on the site itself and spin-off development of accommodation, roads, residential areas and service facilities in surrounding areas.

Tourism Canada recognizes the need for conservation. For example, it works closely with Parks Canada in promoting national parks and heritage sites within the mandate of conservation. All 12 Tourism Development Subsidiary agreements emphasize the need for development projects to conform with local and provincial environmental regulations. DRIE regional offices and/or provincial/territorial tourism departments are the agencies primarily responsible for the implementation and delivery of these tourism programs and projects. Most project-specific feasibility studies take into consideration: (1) resource-based constraints and opportunities, (2) access and (3) sensitive environmental factors. In fact, tourism developments, which blend in well with natural rural (or even urban) settings, are often a welcome alternative to other industrial and commercial land uses. In some instances, they reutilize or replace abandoned mine facilities, dilapidated building structures, former garbage dumps, etc.. Furthermore, tourism can play a key role in increasing the awareness and knowledge of environmental issues and in the promotion of an environmental ethic.

FPLU IMPLICATIONS:

Tourism Canada should proceed with methodological work aimed at facilitating the incorporation of analysis of resource-based constraints and opportunities into tourism planning and decision making. It should also continue, where appropriate, to favour activities which contribute to the conservation of natural areas. With respect to Tourism Canada's responsibility for design and evaluation of programs and sector review of projects, it should continue to apply criteria

that reflect land-use development and land-resource concerns, pursuant to the policy statements and guidelines of the Federal Policy on Lamd Use.

RE.3. Western Transportation Industrial Development Program

DESCRIPTION:

The Western Transportation Industrial Development (WTID) program is a federal government initiative designed to assist businesses in western Canada to take advantage of the economic opportunities resulting from the decision to revise the Crow's Nest Pass rate for railway freight and expand the western railway system. In particular, it will enable companies engaged in manufacturing, processing and related activities to reap the benefits of increased investment in railway capacity.

The WTID program is a five-year undertaking (expiring on March 31, 1988) which provides industrial development assistance to firms in Manitoba, Saskatchewan, Alberta and British Columbia in the manufacturing, processing and related service industries. The program, administered by the Department of Regional Industrial Expansion (DRIE), is intended to augment the assistance available through the Department's standard programming now mainly consolidated under the Industrial and Regional Development Program (IRDP -- program # RE.1). The WTID program provides financial assistance for suppliers to railway and resource development projects, for food and agricultural processors, for industrial diversification projects and for related research and development. The establishment or expansion of facilities to manufacture new products in western Canada is a priority of the program.

In general, WTID program assistance is available to persons or organizations for:

(1) hiring consultants to undertake studies of the industrial development climate; innovation; establishing a new facility; modernization and expansion; and marketing.

(2) supporting projects that involve the development or design of technologically competitive products, processes or technical services.

(3) promoting the establishment, expansion or modernization of eligible business facilities or operations.

The maximum level of assistance will depend upon the location of the facility or activity with reference to the tier groups established under the IRDP.

Approximately four percent of the total support is administered by Agriculture Canada in support of an Irrigation Demonstration Farm Project (see program # AG.9) and about 15% by External Affairs for setting up a research centre at a university, which focuses on protein and starch (POS Pilot Plant Corporation).

POTENTIAL LAND IMPACTS:

Along with IRDP, the WTID program provides stimulus to industrial development and employment in Western Canada, thus maintaining or increasing the demand for industrial land as well as maintaining/increasing the demand for commercial and residential land. Without specific locational criteria, however, there can be a tendency for industries to locate on the fringe of larger centres, i.e., Vancouver, Calgary, Edmonton, the Okanagan, with attendant land development pressures on high quality agricultural land. As a result, land-use planning and resource criteria should be incorporated into the project review process, commensurate with the policy statements and guidelines of the Federal Policy on Land Use.

If research at the POS Pilot Plant Project leads to new food products and new food markets, both domestic and internationally, it can help support the use of agricultural land in western Canada for oilseeds and legume crops. For impacts resulting from the Irrigation Demonstration Farm Project, see program # AG.9.

MAGNITUDE:

Western Transportation Industrial Development Program:

Incentives in support of industrial development --		$52,000,000
Including:		
Funds for studies	$ 2,100,000	
Public information programs	$ 400,000	
Irrigation Demonstration Farm Project (Agriculture Canada)		$ 3,000,000
Research Centre (External Affairs)		$10,000,000
TOTAL		$65,000,000

Office of Regional Development

RE.4. Economic and Regional Development Agreements (ERDAs)

DESCRIPTION:

The purpose of the new Economic and Regional Development Agreements (ERDAs) is to provide a framework for cooperation and consultation on matters relating to economic development in each province, and to coordinate federal and provincial planning, policies and programs in this area. These agreements succeed the General Development Agreements (GDAs) which expired in March, 1984. The aims of ERDAs are:

(1) to enhance economic and regional development of the participating province.

(2) to improve opportunities for the people of that province to contribute to and benefit from economic and regional development.

(3) to consult and co-ordinate, where possible, about planning and implementation of economic and regional development policies, programs and activities of both levels of government in order to encourage development opportunities and to remove barriers to development.

Each ERDA will have a ten-year term and will:

(1) provide a framework within which measures for economic development may be taken in the province.

(2) identify development opportunities for implementation under subsidiary agreements and provide for the general coordination of all such agreements.

(3) provide that measures for economic development will, wherever possible, be taken by the federal or provincial government through its respective programs and departments.

(4) ensure effective consultation and coordination between the federal and provincial governments in carrying out programs for economic development.

(5) where appropriate, provide for joint undertakings with the provincial government, but clearly specify the measures to be taken by each government.

Provisions for consultation and coordination are key items. Each agreement will contain provisions for annual ministerial consultation on priorities, identification of opportunities and possible subsidiary agreements and memoranda of understanding. There will also be arrangements for continuing consultation and coordination by designated officials and initiatives to be undertaken by sectoral departments within the framework of agreed development priorities.

Specific initiatives under each ERDA are implemented by means of subsidiary agreements or through memoranda of understanding. These are developed, negotiated, signed and implemented by the responsible federal sector ministers, jointly with the provinces concerned. Subsidiary agreements can provide (1) for federal and provincial policy and program coordination in support of an agreed priority, (2) for financial support to realize economic development opportunities and (3) for each level of government to carry out the necessary activities within its own sphere of jurisdiction. Memoranda of understanding involve expressions of intent to undertake particular action with respect to a policy, program or activity.

As of December, 1984, ERDAs have been signed with all provinces.

POTENTIAL LAND IMPACTS:

By providing a framework within which agreed measures for economic development may be taken in the participating province, ERDAs can have a variety of land-use effects. For a discussion of the resultant or potential land impacts, the reader is referred to the descriptions provided under specific subsidiary agreements listed under the relevant departments (i.e. programs # AG.7, AG.15, EM.4, IN.9, RE.5 to RE.9 and TR.5).

FPLU IMPLICATIONS:

The management guidelines for each of the subsidiary-agreements ensure that all programs and projects comply with current federal policies, such as the Federal Policy on Land Use. The need to respect and incorporate the guidelines of the Policy into each subsidiary agreement negotiated should also be a requirement built into each ERDA.

Subsidiary Agreements under ERDAs Administered by Regional Industrial Expansion

RE.5. Tourism Development

DESCRIPTION:

The new federal-provincial tourism development agreements are designed to stimulate the orderly growth of the tourism industry and to increase the economic benefits derived from tourism activities in each participating province. The agreements aim to stimulate private sector investment in the tourism sector by encouraging the development of unique tourism destinations and products responsive to market demands, and by increasing provinces' abilities to compete more effectively in tourism markets. Priority programming areas include:

(1) tourism market and product research.

(2) the development of "travel generators" (e.g., destination resorts, theme parks, convention centres, ski areas).

(3) the development, expansion and upgrading of tourism facilities and related infrastructure.

(4) tourism industry development.

(5) development of marketting strategies and advertising.

Individual measures undertaken in a subsidiary-agreement reflect the development opportunities in the tourism sector of each participating province.

As of May, 1986, agreements have been signed with all provinces. Agreements generally span five years.

POTENTIAL LAND IMPACTS:

By developing travel generators, destination resorts and the related infrastructure, tourism development agreements contribute to the intensive development of land areas. Provision of recreation-based facilities or activities result in direct impacts on the site itself though construction/expansion and everyday operations, as well as spin-off development of accommodation, roads, residential areas and service facilities.

The encouragement of domestic and foreign tourism through promotion and development funding has numerous secondary effects which may have an impact on the land resource. Tourism development or activity may degrade the land resource (e.g., wildlife habitat) or destroy fragile natural features (e.g. sand dunes). The secondary development created may result in further commercial

and residential land use. New access roads and improvements to existing road networks may also have land impacts remote from the site. In addition, designation of natural areas for public recreational use ensures conservation of such areas, but may preclude their use for other purposes, such as forestry, private recreation or extraction of mineral resources. The degree and type of land-use impacts caused by tourism development and promotion may depend upon the level of planning, management and control within the designated areas and their surroundings. Tourism development programs can thus serve as instruments for environmental protection, as well as regional development.

FPLU IMPLICATIONS:

The management guidelines for each of the tourism subsidiary-agreements ensure that all programs and projects comply with current federal policies, such as the Federal Policy on Land Use. Guidelines of the Policy should be specifically incorporated into tourism subsidiary-agreements. Further, specific project review and approval criteria reflecting land resource concerns pursuant to the FPLU should be developed and applied under each agreement.

MAGNITUDE:

Signed Agreements	Federal Share	Provincial Share	Total
Canada-Newfoundland	$ 12,500,000	$ 8,500,000	$ 21,000,000
Canada-Prince Edward Island	$ 5,800,000	$ 3,185,000	$ 8,985,000
Canada-Nova Scotia	$ 9,800,000	$ 4,200,000	$ 14,000,000
Canada-New Brunswick	$ 22,000,000	$ 10,000,000	$ 32,000,000
Canada-Québec	$ 50,000,000	$ 50,000,000	$100,000,000
Canada-Ontario	$ 22,000,000	$ 22,000,000	$ 44,000,000
Canada-Manitoba	$ 15,000,000	$ 15,000,000	$ 30,000,000
Canada-Saskatchewan	$ 15,000,000	$ 15,000,000	$ 30,000,000
Canada-Alberta	$ 28,150,000	$ 28,150,000	$ 56,300,000
Canada-British Columbia	$ 15,000,000	$ 15,000,000	$ 30,000,000
TOTAL (Five Years)	$195,250,000	$171,035,000	$366,285,000

Subsidiary Agreements under ERDAs Administered by Regional Industrial Expansion

RE.6. Newfoundland: Pulp and Paper Mill Modernization: 1984-1989

DESCRIPTION:

The Canada-Newfoundland Subsidiary Agreement on Pulp and Paper Mill Modernization provides assistance to selected mills to modernize equipment and processes where needed, and to maintain or improve the viability of the operations. This program aims to improve the efficiency and international competitiveness of the Newfoundland pulp and paper industry by accelerating investment and encouraging policies within the private sector, which are supportive of good forest management, pollution abatement and industrial modernization. Projects are cost-shared by Canada and the Province.

POTENTIAL LAND IMPACTS:

The Pulp and Paper Mill Modernization Agreement assists in increasing the efficiency of mill operations, thus helping these firms to maintain their competitiveness and remain in business. In this way, the Agreement maintains job opportunities. This encourages more viable communities where the mills are located with subsequent support of urban land uses (i.e., residential, commercial, related industrial and transport). Mill modernization will influence the land with forest potential as the demand for raw material increases. The Agreement encourages policies supportive of good forest management and pollution abatement, since more intensive use of the forest resource requires good forest management.

FPLU IMPLICATIONS:

The management guidelines for the subsidiary-agreement ensures that all programs and projects comply with current federal policies, such as the Federal Policy on Land Use. There is a need to ensure that sound forest management practices are a specific requirement of project review and funding, pursuant to the guidelines of the Policy. Land management factors would involve dispositions for allowable cut, method of cut, reforestation and planting of appropriate species in order to ensure a sustained supply. Appropriate land management measures should also allocate forests to different uses, i.e. pulp and paper, saw milling, fuel wood, recreation and wildlife in order to avoid promoting the forest industry at the expense of other necessary and suitable land uses. Pollution abatement measures, if successful, should allow for increased compatibility of the pulp and paper mill industry with surrounding community land uses, in addition to avoiding/minimizing adverse environmental impacts.

MAGNITUDE:

Federal Share	Provincial Share	Total Cost (Five Years)
$38,500,000	$7,833,333	$46,333,333

Subsidiary Agreements under ERDAs Administered by Regional Industrial Expansion

RE.7. Nova Scotia: Strait of Canso Area Development: 1984-1989

DESCRIPTION:

The Canada-Nova Scotia Strait of Canso Area Development Subsidiary Agreement enables Canada and the Province to plan and promote the economic development of the Strait of Canso area. The objectives of the Agreement are:

(1) to encourage industrial development in the Strait of Canso area, based on its deep water harbour and its proximity to land based and offshore natural resources.

(2) to maximize the economic impact of this development by attracting industries with strong linkages to existing and potential industries in the Strait of Canso area, in Nova Scotia and in the Atlantic Region.

(3) to enhance the impact of industrial development and to take advantage of the potential of the Strait of Canso as a regional service centre by undertaking efforts to attract tertiary industries, which complement or support secondary industries that may be attracted to the area.

(4) to maximize employment (500 to 1,000 permanent jobs to be created) and income opportunities at the Strait of Canso for Nova Scotians and especially for the people from the immediately surrounding area.

Projects under this agreement are cost-shared between Canada and the Province, but it is the Province's responsibility to implement the initiatives agreed to by the ministers.

Three programs are to be undertaken through this agreement. The Strait of Canso Industrial Development Authority Program is intended to provide a staff capable of promoting the port and related industry through the exploitation of development opportunities. The main functions of this agency include:

(1) identification of opportunities and methods of capitalizing upon these opportunities.

(2) negotiations with public and private interests.

(3) analyses designed to test the feasibility of development opportunities.

The Small Project Assistance Program is designed to provide funds for small-scale industrial infrastructure elements to support future development opportunities in the Strait of Canso area. Under the Heavy Industry Location Program, assistance is provided for infrastructure at a site (Bear Head) which will be available for heavy industry and port-related activity. Responsibilities include the construction of a wharf, an all-weather highway, and the provision of other required services.

POTENTIAL LAND IMPACTS:

The Canada-Nova Scotia Subsidiary Agreement on the Strait of Canso Area Development, if successful in its objectives, can impact on the regional economy and land-use patterns, enlarging the urban area at Canso. Provision of the necessary infrastructure for industrial development may entice further development to the area.

FPLU IMPLICATIONS:

Pursuant to the Policy, projects under the Agreement should provide for the use of resources in the area (i.e. agriculture, forestry, etc.) as a base for the industries, to the extent feasible. The pace of industrial growth and infrastructure development under the Agreement should be monitored in order to be gradual: if too fast, it would result in a shortage of residential land and commercial services for local residents and employees; also, if too ambitious for the region and markets, it would lead to an oversupply of vacant industrial land which would then remain underutilized. There is a need to plan the industrial and residential land supply in order to avoid these problems.

A significant amount of land is to be allocated to port development, heavy industry and light industry, as well as transport and other infrastructure. There is therefore a need for adequate land planning to ensure, to the extent possible, compatibility to surrounding land uses. Also, criteria should be developed to minimize the degradation of the land resource resulting from construction associated with industrial development and from the disposal of industrial wastes. In summary, implementation of the Agreement should require that a Strait of Canso area land-use plan be in place, approved by the Province, along with the necessary ordinances and staff to implement it. All projects under the Agreement should adhere to local land-planning policies, pursuant to the guidelines of the Federal Policy on Land Use.

MAGNITUDE:

Program	Federal Share	Provincial Share	Total
1) Strait of Canso Industrial Development Authority	$ 2,800,000	$ 1,200,000	$ 4,000,000
2) Small Project Assistance	$ 2,800,000	$ 1,200,000	$ 4,000,000
3) Heavy Industry Location	$14,000,000	$ 6,000,000	$20,000,000
TOTAL (1984-1989)	$19,600,000	$ 8,400,000	$28,000,000

Subsidiary Agreements under ERDAs Administered by Regional Industrial Expansion

RE.8. Saskatchewan: Northern Economic Development: 1984-1989

DESCRIPTION:

The Canada-Saskatchewan Subsidiary Agreement on Northern Economic Development is designed to enhance the economic development of and inc ease the opportunity for employment in northern Saskatchewan. Primary objectives are:

(1) to develop locally-based income and employment opportunities, particularly those related to renewable resources.

(2) to improve the access of northern residents to professional and technological employment opportunities.

(3) to stimulate direct job opportunities, including practical employment-related training.

Initiatives essential for the economic development of northern Saskatchewan are undertaken within the following programs: Economic Development; Human Resource Development; and Capital Investment.

Under the Economic Development Program, regional organizations, communities or groups of communities can receive contributions of up to 90% of eligible costs over a four-year period. These enable the recipient to secure the services of a qualified person to assist in the improvement of regional economic planning and development capacity, and for opportunity identification studies, pre-feasibility studies and feasibility studies of specific economic opportunities. The program also provides the capability to investigate and develop economic ventures on either a local or regional scale in all sectors of the economy through contributions of up to 100% of eligible costs to approved applicants. Financial assistance for business development is also available to major integrated projects based upon the development, processing and marketing of northern renewable resources.

The Human Resource Development Program provides for contributions to be made to accredited bodies to provide professional or technical training to northern residents, and to projects which provide direct employment and practical job-related training.

Capital for employment and economic development is provided through the Capital Investment Program for projects which ensure that a community has access to identifiable stable employment or to ensure that a project generating a significant number of permanent jobs is allowed to proceed despite abnormal capital requirements. Examples of applicable capital projects include road transportation systems and airstrip facilities.

POTENTIAL LAND IMPACTS:

The Agreement with Saskatchewan on Northern Economic Development provides for economic planning and financial assistance to small communities in northern Saskatchewan, thus helping to improve their overall economic environment. The provision of identified infrastructure such as roads and airstrips has the potential to improve access to the northern portion of the province, with resultant impacts on land. Together these measures may enhance the development of the communities and resource-based industries, thus increasing employment opportunities which in turn may affect housing and services requirements which use land. Finally, the economic and infrastructure assistance may provide a base of services which will maintain or enhance the use of surrounding rural land uses such as forestry, mining, hunting, trapping and perhaps recreation.

FPLU IMPLICATIONS:

Business development measures within the subsidiary-agreement need criteria to ensure the sustainable use of the land resource and to consider the land resource effects of industrial development (e.g. mining). There is therefore a need for program and project approval criteria, pursuant to the Federal Policy on Land Use, to ensure that land resource constraints and opportunities are taken into account and that renewable resource management is emphasized in projects approved under the programs.

MAGNITUDE:

	Federal	Costshared 50:50	Provincial	Total
Economic Development	11,000,000	---	4,700,000	15,700,000
Human Resource Development	3,000,000	2,500,000	11,000,000	16,500,000
Capital Investment	1,700,000	---	---	1,700,000
Management and Coordination	950,000	200,000	950,000	2,100,000
TOTAL (1984-1989)	16,650,000	2,700,000	16,650,000	36,000,000

Related Agency that Reports through the Minister of Regional Industrial Expansion

RE.9. Cape Breton Development Corporation (DEVCO)

DESCRIPTION:

The Cape Breton Development Corporation (DEVCO) is a federal crown corporation established in 1968 to stimulate economic adjustment and expansion, while rationalizing the coal industry on Cape Breton Island. It seeks to rehabilitate and re-organize the coal mining industry to make it economically viable, and to promote industrial development and improve opportunities for productive employment on the island.

The Corporation has two divisions: Coal and Industrial Development. The responsibility of the Coal Division is to conduct coal mining and related operations in the Sydney coal field. It currently operates two coal mines and related surface infrastructure, such as a modern coal preparation plant, a railway system and an international shipping pier. A new large mine (Phalen) is now being developed and will be completed in early 1987.

The responsibility of the Industrial Development Division is to promote and assist in the financing and development of industry to broaden the economic base of the island, and to provide employment opportunities outside the coal mines. The division is involved in promoting developments in tourist facilities and a variety of manufacturing and processing industries -- fishing, agriculture, forestry and other primary sector activities. At Sydport, DEVCO also operates an industrial park and wharf facilities. In addition, it undertakes studies and promotion services, and provides assistance to municipalities and other organizations for services facilitating economic expansion. To encourage a climate suitable for industrial growth, in part by beautifying Cape Breton, DEVCO also works with municipalities and the Province to clean up old mine sites and waste dumps, turning them into parks (e.g. New Waterford).

POTENTIAL LAND IMPACTS:

By striving for an economically viable coal mining industry in Cape Breton and improving alternate opportunities for economic growth, DEVCO can produce a wide range of land impacts through the land-using economic activities it encourages. The largest corporation on the island, it is the major source of stable employment (3,500). In addition, it strives to maintain an appropriate economic environment for business investments and stabilize or lower the local rate of unemployment, among the highest in Canada. Employment stability could affect the housing and services sectors which require land for building purposes.

Exploitation of Cape Breton's undersea coal fields has been ongoing for over two hundred and fifty years. It has been the major economic raison d'être for the development of many communities and still serves as a significant economic basis for other land uses, notably transportation and industrial activities, as well as community services. Nevertheless, coal mining has had a variety of adverse impacts on the land resource. Most of the current environmental and aesthetic problems were inherited by DEVCO from its predecessor coal-mining companies, which had no land-use policies. These include slag and waste heaps with the consequent dangers of groundwater pollution, health hazards, etc.. Current operations consider environmental and land-use impacts. The coal preparation plan at Victoria Junction is required to meet stringent federal and provincial environmental standards. Old mine sites and waste dumps constitute problems, but DEVCO has spent considerable moneys to close down and seal old sites and remove coal stockpiles in North Sydney.

Industrial development outside coal mines helps to diversify the economy of Cape Breton, thus assisting employment and encouraging the diversity of land uses. It may help create spin-off developments beneficial to a variety of land uses. Agricultural development may facilitate expansion and improvement of farmland, and the increased availability of grazing areas for sheep farming. However, if proper management techniques are not employed, it may lead to land degradation. Tourism development may encourage spin-off facilities using land, but may also be environmentally disruptive. The potential for the contamination of the land by new industries is controlled through strict land-use regulation in DEVCO's industrial parks, where most new industries are concentrated. Where development occurs outside these industrial parks though, DEVCO has no control over environmental and land impacts.

FPLU IMPLICATIONS:

In sum, there is much potential for DEVCO to apply the guidelines of the Federal Policy on Land Use in the formulation and implementation of development strategies, when these are done in conjunction with the Province and municipalities.

MAGNITUDE:

Coal Division:	1984/85	Forecast 1985/86
Saleable tonnes produced	2,530,000	2,522,000
Net income	$161,065,000	$155,989,000
Net mining (loss)	($10,033,000)	($17,119,000)
Capital expenditures	$86,925,000	$122,224,000
Government funding	$96,958,000	$139,343,000
Industrial Development Division:		
Government funding	$9,500,000	$11,000,000

Correctional Service Program

SO.1. Penitentiary Services: Construction, Acquisition and Management of Land, Buildings and Works

DESCRIPTION:

The Correctional Service of Canada (CSC) is the federal penitentiary agency responsible for administering sentences of two years or more imposed by the courts and for preparing inmates for their return to society. Its Technical Services Activity designs, constructs and maintains buildings and facilities according to the needs and priorities of the Service. It manages major construction projects such as building new institutions and making major renovations to older ones, as well as maintaining and protecting the land and equipment. The Office of the Commissioner is responsible for the overall management of the Service, while senior management controls and manages the institutions themselves. The main management concerns involve minimizing the risk of harm being inflicted by inmates on the public, while ensuring that recognized international standards of humane treatment are met. At the operational level, the Correctional Service of Canada program is delivered through 42 institutions, 21 community correctional centres, and 77 parole offices. Penitentiaries and correctional centres generally occupy the largest areas of land. Total land owned by the penitentiary services amounts to some 7,150 ha.

POTENTIAL LAND IMPACTS:

Government decisions on how, where and when to acquire land for penitentiary services may influence, and in turn be influenced by, the use of the site, surrounding land uses and the market value of the land. The choice of a new location may be affected by the NIMBY (Not In My Back Yard) syndrome, in which residents' perception of such a use is often negative. For reasons of safety and to allay residents' concerns there may be need for additional land as a buffer zone to separate penitentiaries from nearby communities. The use of high capability renewable resource land for penitentiary facilities can supplant its potential for resource production. On the periphery of urban areas, it may provide the wrong signals to land users. Land resource considerations should thus be included in the choice for a new location.

Construction activity regarding penitentiary facilities has land-use impacts, both during and after the actual construction process. Construction of a large penitentiary facility may result in a need for supporting infrastructure with subsequent effects on land uses in the surrounding area.

Work at penitentiaries may provide significant employment, especially in smaller centers, and may serve as the economic basis for a number of land uses and services. In such situations, closure of such a facility or reduction in its size can be very disruptive, and may affect other land-related economic activities.

FPLU IMPLICATIONS:

To offset these and related impacts, CSC makes use of the guidelines of the Federal Land Management Principle in its acquisition process. Additional relevant guidance on land resource use is available in the guidelines of the Federal Policy on Land Use.

MAGNITUDE:

Capital Expenditures: Construction and	$137,887,000 (1984-85 est.)
Acquisition of Land, Buildings and Works:	$104,115,000 (1983-84 est.)

Administrative Policy, Central Administration of the Public Service

TB.1. Federal Land Management (TBAC/FLM)

DESCRIPTION:

The Treasury Board Advisory Committee on Federal Land Management (TBAC/FLM) is a Cabinet-created committee established in 1974 to oversee the acquisition, use and disposal of land by the Federal Government under the 1973 Federal Land Management (FLM) Principle. The FLM Principle states that federal lands should be managed so as to combine the efficient provision of government services and the efficient use of federal real property with the achievement of wider social, economic and environmental objectives. Federal departments and agencies are directed to submit proposed land transactions to the TBAC/FLM for review to ensure that they are consistent with the FLM Principle.

The main responsibilities of the TBAC/FLM are:

(1) to develop and recommend to the Treasury Board appropriate policies, guidelines, criteria and administrative procedures to implement the FLM Principle.

(2) to review and make recommendations to the Treasury Board on proposals and submissions for land transactions -- the acquisition, change in use, disposal, leasing and letting of properties managed by federal departments and programs.

(3) to develop and recommend to the Treasury Board appropriate guidelines for the leasing by the federal government of office accommodation in the National Capital Region.

TBAC/FLM meetings to review transactions are held every second week or, in the case of an urgent situation, as required. The following are exempt from the application of the FLM review process: certain government corporations, Indian lands, lands occupied as national parks and historic sites and territorial lands as defined in the Territorial Lands Act. However, Cabinet has requested that the management of these lands be consistent with the spirit of the FLM Principle.

The TBAC/FLM is presided over by a representative of the Treasury Board and includes, as permanent members, representatives of the departments of Environment and Public Works, the Canada Mortgage and Housing Corporation and, when the Committee considers land transactions in the National Capital Region, the National Capital Commission. All other federal departments and agencies are considered TBAC/FLM members if and when a land transaction which affects them is under review.

POTENTIAL LAND IMPACTS:

Federal government decisions on how, where and when to acquire or dispose of land can have a

pervasive influence on the use of a site, on surrounding land uses and on the market value of land.

FPLU IMPLICATIONS:

By applying the Federal Land Management Principle as well as the Federal Policy on Land Use and its guidelines to federal land transactions, TBAC/FLM ensures that most federal land acquisitions and disposals take into account, among other factors:

(1) compatibility with surrounding uses.

(2) influences on and influences of local plans and actions.

(3) the link between resource capability and the use of land.

(4) the scale of land acquisition and/or disposal, which can have a strong effect on the economy, land use and land values in a small community.

The land management of those departments and crown corporations which lie outside the Federal Land Management (FLM) Principle may not always proceed according to sound land management practices, with subsequent adverse effects on the land. For full implementation of the FLM Principle and the Federal Policy on Land Use, the land transactions of these agencies should formally become subject to the same guidelines and review process.

MAGNITUDE:

Number of Submissions (annual average over the fiscal years 1980-81, 1981-82, 1982-83, 1983-84):

- Land Transaction Items: (acquisition and disposal)	404	331 formerly cleared 58 still under study 16 cancelled or withdrawn
- Non-Transaction Items: (including advice on policy and procedures, background reports to submissions, miscellaneous reports)	140	

Canadian Marine Transportation Administration

TR.1. Public Wharves and Harbours

DESCRIPTION:

The Canadian Marine Transportation Administration (CMTA) is responsible for the development, administration and maintenance of designated harbours, terminal facilities and services, in order to meet commercial shipping needs and to support a safe and efficient national marine transportation system. The Public Wharves and Harbours activity administers 366 sites in support of commercial transport. These ports account for 20% of the national marine cargo tonnage, and are administered by Transport as public ports. Wharves, sheds, storage areas and harbours are provided at the ports, depending on users needs.

Capital expenditures are made primarily to meet user requirements for wharves, sheds, storage areas, dredged harbours, breakwaters and other infrastructure required for efficient port operations. Most operating expenditures go toward repair, re-building and preventive maintenance of existing capital structures and works. Day-to-day local operational activity at the ports includes such functions as enforcing regulations regarding facility use, arbitrating between users and collecting user fees. The smallest ports have limited traffic and exist only to provide access to isolated communities. The larger ports, however, are very active and their support to local industries is of great significance to the local and regional economy.

POTENTIAL LAND IMPACTS:

CMTA's responsibilities for the development, administration and maintenance of public ports create a series of land impacts, both of a site specific and wider economic nature. Public wharves and harbours occupy waterlots, as well as some upland sites -- in support of commercial transport. They thus provide access to commercial uses and facilitate industries dependent on this access. Wharves and harbours serve as a stimulus to the local economy, encouraging further ancillary development on nearby land, and, in this way, altering local land-use patterns. These facilities form a link necessary for local industry, especially manufacturing and wholesale. Thus, they provide employment in the harbour and related industry, maintaining or increasing the need for housing and services, and hence, for industrial, residential and other urban land uses. Wharves and harbours may in some cases be the raison d'être for the development of a community, and form part of the regional transportation network.

Public wharves and harbours may also be the source of land-use incompatibilities and conflicts. Historically, harbours have alienated downtown areas from the waterfronts, occupying land which

may have been better used for retailing, recreation or parkland use. Sometimes, wharves have been built on high capability wetland areas. There are also direct ecological impacts associated with the construction and/or expansion of harbours, which specifically affect delicate ecosystems, such as marshlands and unique wildlife habitat.

FPLU IMPLICATIONS:

Extensive port master planning, often involving public input, preceeds any major harbour development. Plans must address potential land-use and environmental impacts (e.g. Oshawa Harbour Development Plan). Further, projects all must follow the federal Environmental Assessment and Review Process. It may also be necessary to incorporate more fully land resource concerns, pursuant to the guidelines of the Federal Policy on Land Use, into the criteria and procedures used for site selection, project design, expansion and re-location of public wharves and harbours.

MAGNITUDE:

	1984-85	1983-84
Operating Expenditures	$28,783,000	$28,130,000
Capital Expenditures	$30,910,698	$23,764,303
TOTAL	$59,693,698	$51,894,303

Canadian Marine Transportation Administration

TR.2. Harbour Commissions

DESCRIPTION:

The Canadian Marine Transportation Administration provides financial assistance in the form of grants and loans for major construction in harbours administered locally by Federal-Municipal Harbour Commissions. There are nine Harbour Commissions, which handle roughly 20% of the national marine tonnage, located at Port Alberni, Nanaimo, Fraser River (New Westminster), North Fraser, Lakehead (Thunder Bay), Windsor, Hamilton, Toronto and Oshawa. They operate as semi-autonomous public corporations under the Harbour Commissions Act of 1964, the Toronto Harbour Commissioners Act and the Hamilton Harbour Commissioners Act. In order to undertake a capital project, the Commissions (except in Toronto and Hamilton) must obtain the approval of the Minister of Transport, as well as authorization by the Governor-in-Council if funds are to be borrowed from a chartered bank or if the federal government is to finance the project. Major recent port development projects have included construction of the East Port Complex in Hamilton and construction of the West End Marina in Windsor.

POTENTIAL LAND IMPACTS:

Harbour Commissions affect land through both the site-specific and wider economic impacts created by harbours. The harbours generally serve as a stimulus to the regional economy (on a larger-scale than public wharves and harbours: see program #TR.1) and help to support the achievement of Canadian international trade objectives and national, regional and local economic and social objectives. On a regional basis, the multiplier effects of a harbour facility may maintain or further stimulate the development of industrial, commercial and residential uses, which displace existing land uses and help to alter the regional land-use pattern.

Harbour Commissions operate a focus for port, commercial and industrial uses, often located in the inner city area. Harbours may be the source of land-use conflicts regarding the urban shore zone. They may occupy high-valued land which blocks access to the urban waterfront for parkland, recreational, residential and other uses. Harbours are also generally incompatible with wildlife or wetland uses. The mix of uses near the harbour, whose location is most often historically defined, shows a need for land planning to ensure compatibility with other land uses.

The Harbour Commissions assist in improvements to harbour facilities and thus help to increase the efficiency of operations, with potential benefits to ancillary development. The

construction or expansion of harbours may affect delicate ecosystems and unique wildlife habitat. New or expanded harbour facilities can provide access, generate other uses and influence the location of commercial, warehousing or other industrial functions. At the same time, harbour development can encroach on residential, retailing and other urban uses. The transition zone between the harbour and the town is often of low value (e.g. abandoned railway yards) and may form an opportunity for redevelopment. Technological change has led to a switch to shipment by containers which may require less space at the harbour for storage. Thus less land may be needed; alternative waterfront uses could include commercial or recreational land uses. There is, however, potential for the land in excess of requirements for harbour functions to lie idle, if opportunities for redevelopment are not available.

FPLU IMPLICATIONS:

Extensive port master planning, often involving public input, preceeds any major harbour development. Plans must address potential land-use and environmental impacts (e.g. Oshawa Harbour Development Plan). Further, all projects must follow the federal Environmental Assessment and Review Process. It may also be appropriate to incorporate land-use concerns, pursuant to the guidelines of the Federal Policy on Land Use, into the planning and implementation of the expansion, re-development and land management of major harbours.

MAGNITUDE:

Capital: $14.9 million (1984)
$13.5 million (1983)

Airports Authority Group

TR.3. Airports and Associated Ground Services -- Major Federal Airports Component

DESCRIPTION:

The Airports Authority Group (AAG) is responsible for the construction, operation and maintenance of all civil airports and seaplane docking facilities owned or controlled by the Department of Transport, and such other airports as Treasury Board may approve. These airports are divided into three groups: Major Federal Airports, Federal Dependent Airports and Development Airports.

Major Federal Airports are located at Calgary, Edmonton, Halifax, Mirabel, Dorval, Toronto, Vancouver, Winnipeg and Ottawa. The airports eligible for inclusion in the Major Federal Airports planning element are those deemed capable of recovering their operating costs, including depreciation, over a five-year forecast period, either as individual entities or as complementary airports serving the same geographic area.

The Federal Dependent Group comprises the second tier of essential airports included in the national civil airports system and consists of 158 airports. Operating as a network, these airports have sufficient aircraft movements and passenger volumes to recover from users a pre-determined percentage of annual operating costs. However, due to the lower levels of population served by these airports and the consequent lower level of demand, the revenues from operations and credits from the Air Transportation Tax are not adequate for fully self-sufficient management.

Development Airports include 73 aerodromes located in the less densely populated and the more isolated areas of the country. The development and operation of these airports enable all areas of Canada to have reasonable access to air transportation. Since there is a substantially lower volume of aircraft and passenger movements from which revenues can be earned, the AAG assumes the unrecovered costs required to provide and maintain an adequate system capacity and level of service. The nature of the operations at the airports included in this group is similar to those at Federal Dependent Airports. The main difference is a much smaller scale of operations in most instances.

With respect to non-federal aviation facilities, the AAG provides capital and operating assistance to those airports which qualify on the basis of such factors as traffic demand and air carrier services. As well, capital contributions are made for the provision of airport infrastructure to improve the safety of and accessibility to the national transportation system.

POTENTIAL LAND IMPACTS:

The AAG's responsibilities towards the construction, operation and maintenance of airports create a series of land-related impacts through both the site specific and wider economic impacts created by airports themselves. Airports, especially large airports, can serve as a stimulus to the regional economy by attracting attendant industries (i.e., aviation industries) as well as other commercial and recreational users (e.g., hotels). In addition, airports can be a stimulus to further ancillary developments of industrial and commercial uses on nearby land, thus altering the regional land use pattern. Their ability to serve company head offices may be encouraged by the proximity of air travel services for corporate executives. Airports also provide a link to various tourism-related travel, and thus assist the tourism industry. The location and availability of airport facilities in remote areas such as in the North can strongly influence the placement of certain economic activities and land uses.

Airports occupy large tracts of land and may create a number of land-use conflicts. Due to the operational requirement of a large, flat expanse of land, airports are often located on high capability farmland. As well, the provision of airports and related industries and services typically involve the use of land at the edges of Canada's most rapidly growing cities; thus these impact nearby farming and residential areas. The noise created by airport operations can create conflicts with residential uses. Heavy air traffic over densely populated areas also raises the need for safety measures. In general, impacts result from a lack of land planning in the past. In many airports (e.g. Dorval), there is little or no room for expansion to accommodate increased demand, and there is incompatibility between the existing airport and urban encroachment. As a result, this may lead to a more intensive use of the present site and restrictions on aviation operations may be needed in some cases in order to protect the safety of surrounding land users. In like manner, the operation of airport facilities may also place certain restrictions on surrounding land uses.

The decision to locate a new airport in a certain region can profoundly affect the regional economy and the regional land use pattern; conversely a decision to relocate, reduce services or withdraw the airport altogether may lead to a decline in the economic stability of regions highly dependent on air services.

The construction of a new airport has the potential to avoid land-use conflicts now arising in existing airports. Compatibility of the land activity with the resource capability of the land and with surrounding land uses can lead to more positive land impacts. The purchase of large tracts of land for an airport will, however, displace previous land users and uses, often agricultural in nature and, if not managed properly, may inflate the local land prices. There are also direct ecological impacts resulting from the construction or expansion of the airport i.e., land deterioration through disruption of the physical environment.

The management of new airport facilities should be planned carefully in order to avoid, to the extent possible, the routing of aircraft near populated areas. The management of surrounding

lands required for a buffer between the airport and other uses or for future expansion of airport facilities (e.g. Mirabel) should carefully consider long-term leasing arrangements to encourage tenants to make the necessary investments in land conservation practices.

FPLU IMPLICATIONS:

Land use and land resource concerns, pursuant to the guidelines of the Federal Policy on Land Use should be incoporated into the planning, review and implementation process for site selection, expansion, re-development and land management in and around airports.

MAGNITUDE:

Self-Supporting Airports:

Self-Supporting Airports and Associated Ground Services Revolving Fund (Net resources -- 9 sites):	$ 62,390,000 profit (1986-87 est.) $132,108,000 profit (1985-86 est.)
Gross Operating Expenditures (9 sites):	$339,142,000 (1986-87 est.) $330,692,000 (1985-86 forecast)
Capital Projects (restoration and expansion -- 9 sites). Total project costs: Estimates 1985-86 expenditures:	 $246,507,000 $ 95,057,000

Airports and Associated Ground Services:

Total Operating Expenditures:	$189,351,000 (1986-87 est.) $185,822,000 (1985-86 est.)
Total Capital Expenditures:	$138,053,000 (1986-87 est.) $127,000,000 (1985-86 est.)

Canadian Surface Transportation Administration

TR.4. Highway Transport: policies, programs and federal-provincial agreements related to the construction and improvement of highways, bridges and tunnels

DESCRIPTION:

The Canadian Surface Transportation Administration is responsible for the development, implementation and monitoring of policies and programs relating to the construction and improvement of highways, bridges and tunnels. It seeks to ensure the adequate provision and maintenance of a continuous highway network in Canada, nationally and regionally. Responsibilities include negotiating and administering highway construction agreements and conducting engineering and economic evaluations of highway programs.

The government also enters into cost-sharing agreements with the provinces for the strengthening and improvement of primary and other selected highways. Highway transport in the Atlantic provinces is assisted under the Primary Highway Strengthening/Improvement and the Road Construction Programs. In addition, there are transportation subsidiary agreements under the ERDAs with Prince Edward Island, New Brunswick and Manitoba. These are discussed (under program # TR.5) below. In general, highway construction programs provide such benefits as improved safety, increased capacity, reduced user costs, higher vehicle load limits and reduced travel times.

The federal-provincial Primary Highway Strengthening/Improvement Program in the Maritime Provinces and Newfoundland (phases I and II; 1977/78 to approximately 1986/87) is designed to enable Canada and the four Atlantic Provinces to jointly finance the strengthening/improvement of certain links of the primary highway network in these provinces to permit the adoption of specified uniform truck load capacity limits. Individual project selection and approval as well as program evaluation is carried out by a joint Federal-Provincial Management Committee set up under each agreement. Construction is carried out under contracts negotiated by the provincial Departments of Transportation. Results of the Atlantic highways strengthening programs to 1984 are as follows:

(1) Nova Scotia: 197.8 km of grading and structures; 440.2 km of paving.

(2) New Brunswick: 130.9 km of grading; 201.1 km of paving; 15.2 km of clearing; 15 structures.

(3) Prince Edward Island: 63.4 km of rehabilitation and paving; two structures.

(4) Newfoundland: 246.8 km of grading; 240.7 km of reconstruction and paving; 70 km of cutting; six structures.

(Structures include bridges, interchanges, overpasses and underpasses.) Federal contributions do not cover the costs of land acquisition, although compensation for crop damage may be an eligible cost.

The federal-provincial Road Construction Program in New Brunswick and Newfoundland until 1986 under the Special Recovery Capital Projects Program is a cost-sharing program designed to spur economic recovery while putting in place key facilities and services to enhance economic and regional development opportunities, and to finance jointly the construction and upgrading of certain highways. The cost-sharing ratio is generally 75:25 (federal-provincial) in Newfoundland and 80:20 in New Brunswick. Project selection is undertaken by a federal-provincial management committee using a list of eligible projects as provided in the agreements. Road construction work is undertaken by the provincial authorities.

POTENTIAL LAND IMPACTS:

Transportation facilities act as a stimulus to regional development by providing access for tourism or industrial development. Thus, to the extent that the federal-provincial highway agreements provide for project selection and financial assistance through cost-sharing highway construction and improvement projects, they impact on land in a variety of ways. Improvements to highways enable better access, which in turn may influence the location within regions of commercial, residential and other functions, with longer-term changes in land use. Highway improvements can therefore provide a stimulus to local industry and commerce, especially in communities along the selected routes, thus assisting in the attainment of regional development objectives. Highways therefore are a strong factor in determining the regional land-use pattern and may be a stimulus to further ancillary industrial and commercial uses on nearby land. Improved highways, however, also mean improved access to competition from industry outside the region, which could adversely impact the local economy.

FPLU IMPLICATIONS:

Assistance criteria should involve consideration of land resource constraints and opportunities, in order to minimize the use of high capability resource lands for highway routes, while still providing access for a region. Use of comprehensive land planning criteria at the route selection stage may minimize direct ecological impacts associated with the construction or expansion of highways (such as disruption of environmentally sensitive areas, physical alteration of the land resource, soil erosion, disruption of water regimes, flooding, etc.). The same is true for direct impacts on adjacent lands, including disruption of existing residential or recreational uses.

The broad policy statements of the Federal Policy on Land Use (FPLU) should be incorporated into the highway sub-agreements. While environmental review is specifically called for, it is also important that project review and approval criteria reflecting strategic locational, as well as

environmental concerns pursuant to the FPLU, should be developed and applied under each sub-agreement.

MAGNITUDE:

Policy and Administration: $2,460,000 (1984/85 est.)
$2,224,000 (1983/84 est.)

Primary Highway Strengthening/Improvement Program (Atlantic Provinces):

	Federal Share	Total Cost
Phase I (1977-1982)	$100,000,000	$200,000,000
Phase II:		
- Nova Scotia (1982/83-1986/87)	$ 38,500,000	$ 77,000.000
- New Brunswick (1982/83-1986/87)	$ 37,000,000	$ 74,000,000
- Prince Edward Island (1982/83-1985/86)	$ 8,500,000	$ 17,000,000
- Newfoundland (1982/83-1985/86)	$ 36,000,000	$ 48,000,000
	$120,000,000	$206,000,000

Road Construction Program under the Special Recovery Capital Projects Program (Newfoundland and New Brunswick; to 1986):

	Federal Share	Total Cost
Newfoundland	$ 35,000,000	$ 44,500,000
New Brunswick	$ 44,000,000	$ 54,500,000
TOTAL	$ 77,000,000	$ 99,000,000

Canadian Surface Transportation Administration

TR.5. Federal-Provincial Transportation Development Subsidiary Agreements under ERDAs

DESCRIPTION:

The new federal-provincial transportation development subsidiary agreements are designed to set out measures to be undertaken by Canada and the participating province in support of enhanced transportation networks and services. Priority programming areas include construction, upgrading and/or improvements to highway infrastructure, port infrastructure and air infrastructure, as well as research and analysis on the technological and operational aspects of the transportation system. As of May, 1986, agreements have been signed with five provinces, including Prince Edward Island, New Brunswick, Manitoba, Newfoundland and Québec.* Agreements generally span five to seven years.

The Agreement reached with Prince Edward Island provides for assistance to improve the capacity and safety of primary highways, and to improve the port facilities at Souris and Summerside. The highway infrastructure improvements are to be managed in accordance with the Primary Highway Strengthening Agreement (see program # TR.4). The ports infrastructure improvements involve upgrading of landings, wharves and docks, deepening of berths and expansion of warehousing facilities.

The Canada-New Brunswick agreement provides for the joint financing of a highway construction, upgrading and improvement program aimed at strengthening certain links along Highways # 8 and 11 in the province. Projects generally involve grading, paving, signing and lighting; construction of overpass and by-pass structures; grade separation works; construction of bridges and clearing of rights-of-way.

The two subsidiary agreements with Manitoba involve a number of measures to enhance transportation development in the Province. Under the Transportation Development sub-agreement, assistance is provided for research into Manitoba's existing transportation system in order to forecast future demand, identify current limitations or potential future deficiencies, and examine the consequences of railway branchline abandonment. The sub-agreement calls for the establishment of a Transportation Institute at the University of Manitoba for research, education and training in areas related to transportation, and for the establishment of a Transportation Industry Development Advisory Committee. This committee will examine and define an action program for both private and public sectors bearing on the future of Winnipeg as a major national transportation centre, and examine other issues affecting the long term

* Agreement with Newfoundland not described herein.

development of the transportation system. Air infrastructure and highway infrastructure improvement projects are also included in the agreement. A major construction program will be undertaken to expand and upgrade air transportation facilities at Winnipeg International and other airports in Manitoba. Highway infrastructure improvements projects aim to improve the capacity and safety of provincial highways. In addition, the sub-agreement attends to the development and operation of rail passenger services through the development and testing of a prototype Rail Bus vehicle which will improve the accessibility of remote communities to regional service centres and through improvements to the Winnipeg Railway Station. The Churchill Subsidiary Agreement provides for major rail, port and highway infrastructure improvements.

The Canada-Québec subsidiary agreement provides for the joint financing of (1) research and development projects in the fields of road and rail transport systems technology, transport micro-electronics, computerization, and intermodal transport and of (2) projects geared to improvements to various highways and to marine and air services to the north shore of the St. Lawrence, Northern Québec and Témiscamingue. It also provides for urban transportation projects aimed at (1) improving the functioning of the transportation network in Greater Montreal and (2) facilitating the development of intermodal stations in urban centres.

POTENTIAL LAND IMPACTS:

The Transportation Development agreements provide for highway capacity improvement projects in New Brunswick, Prince Edward Island and Manitoba. Highway improvement can stimulate regional and community development, remove land from agriculture and other uses near the route and adversely affect nearby residential, recreational and other uses. Local construction can cause physical and ecological alterations in the land resource through changes in stream patterns, flooding, soil removal, silting, etc..

Port improvements projects in Prince Edward Island will expand and upgrade wharves and docks within two towns. These improvements may stimulate further development of ancillary industrial and commercial uses on nearby land. There is a need to undertake land planning and review in order to avoid, to the extent possible, incompatibilities with surrounding land uses.

Improvements to airports in Manitoba can result in a series of land impacts. The expanded facility may increase pressure on the surrounding uses through increased traffic congestion and encroachment on the urban area. There may also be increased land-use conflicts (noise, safety) arising from expanded aviation operations over surrounding land use. Other land-use effects as outlined in program # TR.3 may also occur. There is therefore a need to consider land-resource constraints and opportunities when planning improvements and expanding the airports. Research programs in Manitoba dealing with the role of Winnipeg as a transportation centre, branch line abandonment and the overall transportation system may provide informed advice on transportation system development which may affect regional development and future land-use patterns. Also, research into the operational efficiency of transport vehicles, terminals or networks can

indirectly affect land use through the requirement for fewer and smaller future facilities because of increased efficiency of transport operations. Research programs should involve land resource considerations in order to minimize the adverse land impacts from transportation development.

FPLU IMPLICATIONS:

The broad policy statements and guidelines of the Federal Policy on Land Use should be incorporated into future transportation development subsidiary agreements. Specific project review and approval criteria reflecting land-resource concerns pursuant to the FPLU should be developed and applied under each such agreement.

MAGNITUDE:

Signed Agreements	Federal Share	Provincial Share	TOTAL
Canada-Newfoundland	$112,500,000	$ 67,500,000	$180,000,000
Canada-PEI	$ 25,000,000	$ 16,900,000	$ 41,900,000
Canada-New Brunswick	$ 63,417,000	$ 27,083,000	$ 90,500,000
Canada-Québec	$ 85,000,000	$ 85,000,000	$170,000,000
Canada-Manitoba	$111,610,000*	$ 26,050,000	$137,660,000
TOTAL (five years)	$397,527,000	$222,533,000	$620,060,000

* Includes $1,250,000 from Canadian National Railway Company.

Canadian Surface Transportation Administration

TR.6. Water Transport: policies and programs for the operation of coastal ferry and shipping services

DESCRIPTION:

The Canadian Surface Transportation Administration (CSTA) is responsible for the development, implementation and monitoring of policies and programs for the operation of certain coastal steamship and ferry services for which Canada is responsible. These service responsibilities meet commitments made under the Terms of Confederation with PEI, the Terms of Union with Newfoundland, and subsequent policy decisions. Financial assistance is provided to ferry services under the Terms of Union and Confederation, Newfoundland coastal services, services offering special development opportunities and services to remote communities. The recipients include:

(1) Newfoundland, Quebec and BC.

(2) five private operators of ferry services on the East Coast.

(3) CN Marine, operator of ferry services in the Atlantic provinces, and the Newfoundland coastal service.

These subsidies ensure the provision of an adequate level of ferry and coastal passenger and freight services. Other responsibilities of CSTA include setting the levels of service for subsidized water transport, negotiating and monitoring performance against operating contracts with the various ferry services and negotiating agreements with the provinces for shared cost ferry services.

POTENTIAL LAND IMPACTS:

CSTA's responsibilities towards coastal steamship and ferry services impact on land through the site specific and wider economic impacts brought about by these services. Ferry and coastal services provide a basis for industrial and commercial uses, through the shipment of raw materials for industry and consumer goods for communities to the islands on the east and the west coasts. Ferry services may prove essential to the maintenance of agricultural and forest land uses which require the shipment of high bulk, raw and processed products by rail and truck on the ferries from the islands to mainland Canada. The changing of ferry services or rates may have significant impacts on agricultural, forestry and other industrial and commercial uses on the islands which are dependent on the ferry and coastal services. Since coastal shipping is largely responsive to community needs, changes which would impact significantly on land use are not expected.

FPLU IMPLICATIONS:

The Ferry terminal sites are single-use, fully-developed facilities. No changes in land-use patterns are anticipated on these sites for the foreseeable future.

MAGNITUDE:

Total Activity Expenditures: $199,610,000 (1984-85 actual)
$194,212,000 (1983-84 actual)

Canadian Surface Transportation Administration

TR.7. Rail Freight Transport and Rail Passenger Transport: policies and programs regarding rail passenger and freight services

DESCRIPTION:

The Canadian Surface Transportation Administration (CSTA) is responsible for the development, implementation, and monitoring of policies and programs:

(1) to achieve and maintain an effective and efficient national railway transportation network of freight services, including the transportation and handling of grain, oilseeds and processed grain products.

(2) to provide rail passenger services.

These activities are designed to assist in the development and operation of a safe, efficient and adequate national rail passenger, rail freight and grain transportation system that contributes to the achievement of government objectives.

The Rail Freight Transport Activity is responsible for:

(1) advising the government on all matters concerning rail freight and grain movement and handling.

(2) assessing the commercial viability of the railway system.

(3) monitoring railway services and freight rates.

(4) assessing railway technology and energy efficiency.

(5) evaluating government programs and projects.

(6) providing advice on subsidies and legislative proposals.

(7) advising the Minister on the disposition of certain lands of the Canadian Government Railways (a group of government owned railway companies that became part of the Canadian National Railway).

Current programs include: the Branch Line Rehabilitation Program, the Hopper Car Program and the Newfoundland Railway Containerization Program.

The Branch Line Rehabilitation Program provides financial support to improve the branch line system in Western Canada in order to permit the year-round movement of high-capacity railway cars. Work is restricted to grain-dependent lines in the permanent railway network, plus the line to Churchill. The 1979 Grafting Agreement involved some 10,725 ha of land valued at $5

million (1982) along 3,000 kilometres of abandoned prairie branch-line rights-of-way. These have been transferred to the Prairie Provinces for administration and final disposition. The three transfer agreements signed between 1981 and 1983 ensure that such rights-of-way cutting through Native Reserves are returned to the reserves. Expenses for administration of the lands are charged to the provinces.

Through the Hopper Car Program, contributions are provided to the Canadian Wheat Board for the purchase and leasing of hopper cars to assist in transporting grain to markets. The Newfoundland Railway Containerization Program is a five-year program started in 1980-81 which aims to revitalize the Newfoundland railway, and to determine the role that the railway should play in the overall transportation system. This program in Newfoundland will develop, test and evaluate a fully operational container-based railway. Funds are allocated for the purchase of containers, the placement of modern container loading equipment at key distribution points and the purchase of appropriate narrow-gauge railway equipment, including flatbed cars and yard equipment, all to permit effective interlinking with the marine and trucking transportation.

The Rail Passenger Transport Activity administers payments for rail passenger services provided by VIA Rail, develops and evaluates rail passenger policy, and assesses the efficiency and cost-effectiveness of rail passenger services. Since April, 1979, VIA has been responsible for managing all rail passenger services in Canada formerly operated by the CNR and CPR. VIA must provide the services designated and funded by the government. VIA then contracts with the CNR and CPR for the running rights, operation of passenger trains on their rail systems and other support. VIA Rail payments are allocated for the operation of passenger services, and for the modernization of its equipment, facilities and infrastructure such as maintenance facilities, stations and shelters. In addition, grants are made to the Province of Quebec for the modernization of commuter train services in the Montreal area. These grants are intended to improve commuter train frequency, encourage ridership and lower fares.

POTENTIAL LAND IMPACTS:

CSTA's responsibilities towards rail freight and rail passenger services impact on land through both the broader economic and site-specific impacts of railway transport services. By providing and maintaining the necessary railway services, the Railway Transport program provides access for industrial and commercial development, thus acting as a stimulus to the regional economy served by the railway, with resultant impacts on regional land-use patterns. Conversely, withdrawal of service through rail line abandonment, for example may lead to a decline in regional or community development and a change in regional land use.

The Branch Line Rehabilitation Program supports the upgrading of existing rail lines, thus providing continuing and more efficient access to users. It assists grain farmers by enabling them to ship their grain to market more effectively. To the extent that the program maintains or improves the economic position of grain producers, especially small farmers, it may allow

more farmers to remain on the land, thus keeping the land in production. The improved income may also allow more intensive use of the land and possibly the increased adoption of conservation measures. However, land management is totally dependent on the individual decision-maker; this program makes no direct impact on his decision-making. By providing improved access to agricultural communities which have developed along the branch line, the Branch Line Rehabilitation Program may help to save small agricultural service communities which provide community and business services to farmers in the surrounding rural area. Nevertheless, land users and communities adjacent to the 3,000 kilometres of rail branch line which have been abandoned and transferred to the provinces for final disposition may suffer adverse consequences from the decreased access to rail services.

The land impacts of the Hopper Car Program are not sufficiently direct to be included in the present discussion. Please refer to discussion under the Canadian Wheat Board (program # CW.1) for land-use impacts arising from the transport of grain.

The Newfoundland Railway Containerization Program may help to revitalize the freight transport system in that province through the introduction of modern shipping technology, which may help to support local industries and communities. The program should generally allow more reliable and cost-effective shipment of products, which may assist land-based industries such as forestry and mining in getting their resources to market. The program therefore can potentially stimulate the use of resource lands, and the growth of communities dependent upon natural resources. The containerization program can assist other industries dependent on rail transport such as wholesaling and fish processing, and the communities which are dependent on these industries.

Payments to VIA Rail for passenger services have relatively small land-use impacts since service is provided on a roadbed owned by other companies (CNR, CPR), transportation alternatives (i.e., bus, car, air) are more highly utilized and the volume of passengers is low.

Advice provided on the national railroad network may affect the distribution of goods and services, and modify the transportation network. It may assist in stimulating or maintaining railway services development, thus opening up opportunities for industry and communities. However, it probably does not impact on land to the extent that it did formerly, because of the ready availability of other transportation alternatives.

FPLU IMPLICATIONS:

Land resource concerns, pursuant to the guidelines of the Federal Policy on Land Use, should be incorporated into the development of new programs or proposed revisions to existing programs.

MAGNITUDE:

Program	1984-85 est.	1983-84 forecast
Rail Freight Transport		
Branch Line Rehabilitation Program	$132,900,000	$ 93,200,000
Hopper Car Program	$114,806,351	$ 89,600,000
Newfoundland Railway Containerization Program	$ 7,224,065	$ 23,000,000
Sub-Total*	$254,930,411	$234,423,000
Rail Passenger Transport		
Via Rail Payments		
. Operation of Passenger Services	$476,500,000	$447,679,000
. Acquisition and Renovation of Plant and Equipment	$197,900,000	$160,700,000
Montreal Area Commuter Train Services	$ 12,000,000	---
Sub-Total*	$693,318,000	$614,931,000
TOTAL	$887,644,000	$849,354,000

* Includes other expenditures.

Related Agency that Reports Through the Minister of Transport

TR.8. Grain Transportation Agency

DESCRIPTION:*

The Grain Transportation Agency (GTA) is responsible for:

(1) promoting transportation system efficiency with regard to grain.

(2) monitoring railway performance.

(3) allocating grain cars in co-operation with the Canadian Wheat Board and the Canadian Grain Commission.

(4) generally co-ordinating the handling and transportation of grain.

The GTA was created by the Western Grain Transportation Act enacted by Parliament in November 1983 and supersedes the Grain Transportation Authority.

Under the Act, the GTA carries out additional specific duties, including:

(1) reviewing railway investment plans for grain transportation.

(2) providing forecasts of grain movement for rate-making purposes.

(3) determining the adequacy of the railway fleet for grain movement.

(4) developing and administering agreements with the railways governing use and operation of government-owned rail cars.

(5) entering into agreements to provide for the trucking of grain.

(6) carrying out studies on grain transportation and handling as required.

It also recommends on how to secure the cooperation of the industries that provide the required transportation and handling services and facilities, in order to ensure that Prairie grain moves to domestic and export markets promptly and efficiently.

POTENTIAL LAND IMPACTS:

By promoting improvements to system efficiency, developing performance guarantees and allocating cars re. grain transportation and handling, the Grain Transportation Agency assists in the

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* This program description is based on information to April, 1985. For a more recent description, contact officials at Transport Canada.

movement of grain to market in an effective manner by all modes of transportation. The GTA therefore affects the grain-growing industry, which is an extensive user of agricultural land. Though many other factors affect the world price of wheat, the amount of grain produced and sold, and farm incomes earned, transport is a vital and necessary link. To the extent that effective grain transportation and GTA activities help to sustain farmers' incomes, the program assists in maintaining the land base in agricultural use.

The area of land in grain production annually, the farming practices employed and the extent of land degradation, however, are also influenced by many other factors. Regulatory programs under the Canadian Transport Commission also affect the transport of grain (see program # TR.12).

Related Agency that Reports Through the Minister of Transport

TR.9. Ports Canada: Canada Ports Corporation

DESCRIPTION:

The Canada Ports Corporation (CPC), formerly the National Harbours Board, is a Crown Corporation established in February, 1983 pursuant to the Canada Ports Corporation Act. This group of ports, collectively referred to as Ports Canada includes Vancouver, Prince Rupert, Churchill, Port Colborne, Prescott, Montréal, Québec, Trois-Rivières, Chicoutimi/Baie des Ha! Ha!, Sept-Iles, Belledune, Saint John, Halifax and St. John's. These ports handle approximately 50% of Canada's waterborne commerce.

The Act permits the establishment of Local Port Corporations at ports which meet the following three basic criteria:

(1) the port is of national or regional significance.

(2) there is a demonstrated local interest in the management of the port.

(3) the port will likely be financially self-sufficient.

To date, LPC status has been granted to Vancouver, Prince Rupert, Montréal, Québec, Halifax and St. John's.

Ports Canada ports provide a full range of marine terminal and harbour facilities in order to accommodate the transshipment of all types of cargo, import and export, in an efficient and effective manner. The ports, through comprehensive planning programs and related capital programs, are able to meet the changing demands placed on them. The total land area, exclusive of water, occupied by the ports is approximately 3,100 ha.

POTENTIAL LAND IMPACTS:

The responsibilities of the Canada Ports Corporation towards the planning, administration and management of national ports create a series of land impacts through both the site-specific and broader economic impacts created by port facilities. Ports are a major component of the national transportation system and have had significant influence on land use and transportation patterns in urban centres and the surrounding regions. This is particularly so in relation to the location of marine industrial and commercial development in the immediate port area.

Intermodal transportation links to the ports (road, rail) have also had an impact of the land-use patterns in the vicinity of the port facility. Ports also use significant areas of land for warehousing purposes.

Historically, port and urban developments have occurred simultaneously. Port activity has been an accepted part of the community, if not its raison d'être. Port service industries such as marine supplies, ship repair and ships agents have traditionally developed adjacent to the actual marine terminal sites. Because of this traditional development pattern, major port facilities are today an integral part of the urban core of Canada's maritime cities. This juxtaposition of land uses can create competing land use demands in the vicinity of the port. Marine terminal development and downtown urban growth have often been restricted by one another.

Ports can be a key element in land use planning and redevelopment in the central core of large cities. Existing ports are often located in the downtown cores of urban centres. Marine terminals can form a separation between the waterfront and the rest of the city, if ancillary facilities, such as railway lines and truck parking areas, isolate the waterfront from the urban area. In an urban renewal context, the adjacent inner city areas are sometimes in various states of disrepair. They can exhibit a changing mix of land uses, which may not be naturally compatible. These areas are often in need of upgrading in order to enhance the aesthetic quality of the city-scape for residential or recreational purposes. Ports can tend to restrict such land-use possibilities in adjacent areas.

Port administrators naturally favour the retention of suitable waterfront land for port development as this type of land is site-specific and can be classified as a non-renewable resource. In the vast majority of mature ports, there is no significant waterfront land available for substantial new terminal development. Competing land-use demands are commercial, residential or recreational in nature, or are related to surface transportation requirements.

In some areas, ports are not perceived solely as centres of economic and industrial activities, but as "people places". Local residents have lobbied for access to the waterfront or a "window on the port". The Vieux Ports projects in Montreal, Quebec and Trois-Rivieres, the Historic Properties in Halifax, the Market Square Complex in Saint John and developments related to Expo '86 in Vancouver are prime examples of this need being accommodated. These people-oriented developments within the port proper create transition zones between the daily physical activity of port operations and the pedestrian orientation of the city core.

In some instances, the development of marine terminals, such as the Roberts Bank coal terminal in Vancouver, the Ridley Island grain and coal terminals in Prince Rupert and the Grande Anse terminal in Chicoutimi, has taken place outside of what is known as the "inner harbour" area of the port. Location factors such as land availability, marine and intermodal access, environmental constraints and overall development costs are prime determinants in this type of

"outer port" development. However, the general suitability of harbour development to specific locations is an important factor, particularly from a municipal perspective. In many ways, the decentralization of some terminal activities from traditional city centre locations, has accommodated the demands and problems of competing land use. The vast majority of existing terminal activities are not expected to relocate. Future terminal improvements will most likely be made to the existing infrastructure.

FPLU IMPLICATIONS:

Development of new port facilities and certain operations can impact on the local environment and alter the existing land-use pattern. As a consequence, port development proposals are subject to the Federal Environmental Assessment and Review Process. The Roberts Bank coal terminal in Vancouver and the Beauport Flats development in Québec have been subject to the full process. Mitigating measures are incorporated in projects as determined by in-depth environmental studies and the review process.

Each port in the Ports Canada system is supposed to be mindful of and to adhere to government policies and directives in the development of its resources. Land-use concerns, pursuant to the guidelines of the Federal Policy on Land Use should also be considered as part of the overall planning and implementation of the expansion, re-location, re-development and land management of ports.

MAGNITUDE:

	(in millions)	
	1984	1985
Revenue from Operations	$213.4	$202.3
Total Assets	$924.8	$865.8
Capital Expenditures	$ 96.6	$ 74.6
Traffic (in million metric tonnes)	164.8	143.9

Source: Ports Canada Report to the Minister, 1984.

Related Agency that Reports Through the Minister of Transport

TR.10. St. Lawrence Seaway Authority

DESCRIPTION:

The St. Lawrence Seaway Authority (SLSA) was incorporated in 1954 to construct, operate and maintain, either on its own in Canada or in conjunction with an appropriate authority in the United States, a deep waterway between the port of Montreal and Lake Erie as well as bridges connecting Canada with the United States. SLSA provides navigational services through locks and canals on the St. Lawrence River between the port of Montreal and Lake Ontario, and through the Welland Canal.

Construction on the Seaway has led to several circumstances where municipal or provincial services, utilities or amenities were altered. Joint remedial agreements were negotiated to compensate for these changes in the form of lump sum payments or specific construction projects. The latter included local services and utilities, highways, sewer and hydro lines, water supply systems, parks and other uses which were affected by the construction of the Seaway Authority works. SLSA also administers the Agreement for the Maintenance of the Beauharnois Canal and Associated Works, and the Welland Canal Crossing Agreements. The latter provide for SLSA to share with the Government of Ontario in the costs of constructing six highway tunnel crossings of the Welland Canal (three have been built to date), and in the costs of construction a bridge at Port Colborne, Ontario. The purpose of these agreements is to alleviate the congestion of highway traffic crossing the Welland Canal and to eliminate existing lift bridges which interfere with the movement of ship traffic through the Welland Canal.

POTENTIAL LAND IMPACTS:

SLSA policies with respect to traffic movements and, to some extent, seaway tolls can help determine long-term land-use and development patterns of very large areas by facilitating the transport of high-bulk/low-value products (e.g., grains, iron ore, coal, bauxite) by ship through the Seaway. The movement of these goods serves the attendant industry (i.e. agriculture, forestry, mining, iron and steel), thus affecting cities and regions dependent upon these industries.

Development of the Seaway was not without costs to existing land use and the land resource, although these costs were largely the result of related hydroelectric power development and the reservoirs which were necessary. Considerable land in Eastern Ontario was flooded to accommodate the hydroelectric developments along the Seaway route. In this way, previous land

uses, including farming and small communities, were replaced; the potential of the land along the route for other uses was permanently altered.

SLSA has also acquired extensive areas of land for future development of canals, thus impacting on local land use patterns and decisions. The type of impacts occurring on these lands depends to a large degree on the length and terms of the lease provided by the SLSA. The longer term leases now available on Seaway lands to fruit and grape growers in the Niagara peninsula, for example, help to ensure that necessary investments and effective land management is undertaken by growers to enable the productive use of tender fruit soils for orchards and vineyards until the land is required for canal development.

FPLU IMPLICATIONS:

Although not expressly required of a Crown Corporation, the land management, acquisition and disposal plans of the SLSA are consistent with the Federal Land Management Principle and the guidelines of the Federal Policy on Land Use, to the extent possible within the mandate of the Seaway Authority.

Canadian Transport Commission

TR.11. Air Transport: regulation of commercial air services and subsidies*

DESCRIPTION:

The Air Transport Committee of the Canadian Transport Commission (CTC) is responsible for the general and economic regulation of commercial air services in Canada. The Committee performs these functions through:

(1) the licensing of air services.

(2) the inspection and monitoring of air carrier and charter operations.

(3) the examination and control of air fares.

(4) the review of acquisitions and mergers involving air carriers or commercial air services.

(5) economic and financial analyses of the air transport industry.

It participates in the development of international air agreements, and consults with foreign aeronautical authorities on scheduled and chartered air transport. The Air Transport Committee also administers federal transportation subsidy programs for commercial air carriers. The CTC then regulates the development and operation of the air transportation sector. Thus the CTC influences the level of air service to be received by individual cities and regions, in order to:

(1) protect the interests of the users of air transportation.

(2) maintain the economic well-being and growth of Canada.

(3) coordinate the operations of air transport carriers.

POTENTIAL LAND IMPACTS:

CTC's responsibilities regarding air transport regulations and rates may impact on land through the regulation of route selection, frequency of service and air fares charged by carriers. Changes in regulations governing the provision of air services, the frequency and fares charged have implications for economic health and land-use patterns of individual communities. Changes in the air service regulated may affect communications for corporate head offices and the location of certain industries dependent to some degree on commercial air carriers (e.g.

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* This program description is based on information to April, 1985 and does not take into account recent initiatives to deregulate. For a more recent description, contact officials at the Canadian Transport Commission.

tourism). Thus, it may affect the attendant commercial and residential uses in some communities. In particular, transportation subsidy programs for commercial air carriers enable the provision of service in remote areas and in the North. It therefore may affect the economic base and land-use patterns in these communities and the surrounding region.

FPLU IMPLICATIONS:

Studies and regulatory reviews by the CTC should consider the impact of air service removal or reduction, as well as rate increases on the economic base of communities and regions to be affected, pursuant to the Federal Policy on Land Use (FPLU). Recent de-regulation in 1986 has diminished the leverage of the CTC to influence air route selection and rate structures in consideration of the economic base of smaller and more remote communities, consistent with the FPLU.

MAGNITUDE:

Total Activity Expenditures:	$8,197,000 (1984-85 est.)
	$8,012,000 (1983-84 est.)

TRANSPORT CANADA

Related Agency that Reports Through the Minister of Transport

Canadian Transport Commission

TR.12. Railway Transport: regulation of railway operations and subsidies

DESCRIPTION:

The Railway Transport Committee of the Canadian Transport Commission (CTC) administers the economic and safety regulation of railway services in Canada through:

(1) analyzing, developing and promulgating railway accounting and costing methodology.

(2) auditing railway accounts.

(3) examinating and analyzing tariffs.

(4) resolving complaints concerning tariffs.

(5) monitoring the quality of freight and passenger train services.

(6) approving branch-line abandonment.

(7) approving agency centralization applications.

(8) developing and enforcing safety regulations, standards and procedures for railway operation, equipment and infrastructure.

(9) administering subsidy payments to railway companies as prescribed under the Railway Act, the Atlantic Region Freight Assistance Act, the Maritime Freight Rates Act and the Railway Relocation and Crossing Act.

Under the recent Western Grain Transportation Act, the CTC is responsible for establishing the new freight rate which prairie farmers pay for moving specified grain commodities by rail. The Act calls for statutory payments to railways to compensate for revenue-cost shortfalls incurred in the transportation of grain, to be administered by the CTC. As well, the Act provides special roles for the CTC in respect of railway costing for grain -- the designation of grain-dependent branch lines and the verification and evaluation of railway capital investment, expenditures and plans associated with the Western Canada railway system for grain transportation.

POTENTIAL LAND IMPACTS:

CTC'S regulatory activities re. railway transport can impact on land and land use through the (1) monitoring of freight rates, (2) regulation of branch line abandonment, (3) new railway construction, (4) subsidy payments for rates of certain products, (5) routing of dangerous goods and (6) railway relocation, among other considerations. Also, there are a series of land impacts resulting from its responsibilities towards the Western Grain Transportation Act.

Historically, freight rates have been a contributing factor, reinforcing the national land-use pattern which concentrated industry in the central Canadian heartland, while focusing the economy on grain and raw materials in the hinterland. Freight rates have influenced the location of industrial and raw materials production in selected areas, with consequent effects on regional land use. Changes in freight rates may cause changes in the national flow of goods and services which in turn may cause changes in regional land-use patterns.

Branch line abandonment affects the availability of railway transport and of agricultural infrastructure for rural land users, especially for family farms dependent on small rural towns on the Prairies. By tending to reinforce the pattern of a reduced number of agricultural service centres, communities and individual farmers on the Prairies, it may ultimately affect the land-tenure pattern and farm size towards large, corporate farms, if not changing the land use itself.

Relocation of rail yards from the central city to the fringe area of some Canadian cities under the Railway Relocation Act tended to remove "blight" from the central city and allow for redevelopment of valuable land for commerce, retail, recreation and tourism uses. Relocated railways also use extensive land areas on the urban fringe. Rail yards may be located on land with good capability for agriculture and other resource uses. Adjacent uses on the urban fringe could be stimulated by the railway facilities or their relocation. If improperly managed though, rail facilities and other uses may conflict with each other.

The potential impacts of the recent Western Grain Transportation Act are open to debate. Some possible effects on the land resource are presented below.

The reformed freight rate structure for prairie grain and increased payments to railways (i.e., the Crow Benefit) are designed to improve the overall efficiency, reliability and availability of grain. If larger markets and higher exports are facilitated through a more efficient transportation system, there is potential for farmers to increase their income which in turn may indirectly assist them in maintaining/enhancing land in production and improving land management practices. Conversely, however, the higher transport cost contributions from farmers results in higher production costs which may affect the producer's ability to remain in business and the amount of money available to improve farm operations or adopt land conservation measures.

Another anticipated impact of the new rate structure is the encouragement of crop diversification and the growing of specialty crops in addition to increased domestic use of grain for livestock feed and more local processing, thus influencing land use patterns. By encouraging a more diversified agriculture economy, the new rate structure would promote increased and diversified crop production and lower on-farm storage costs potentially improving the farmers' economic position with prospects for improved land management practices. If markets are favourable, there may also be a shift towards local feed grain and livestock production, with subsequent effects on land-use patterns.

Some authors believe that an increase in western livestock production caused by the new rail rate structure will affect the viability of eastern livestock and feed grain producers, thus affecting land-use patterns in eastern Canada. It is, however, the opinion of some federal economists that regardless of what happens to transportation costs in the west, Québec will continue to have access to feed grains at international prices from a variety of sources, including the US. Québec producers of feed grain will continue to have a ready market for their production because that province must still import 50% of its requirements. Therefore, it is concluded that there would be little effect on Quebec livestock producers with consequently little effect on land use in eastern Canada.

FPLU IMPLICATIONS:

The review process for various programs: freight rates, branch line abandonment, railway relocation, and the Western Transportation Initiative should incorporate the policy statements and guidelines of the Federal Policy on Land Use. There is a need for criteria accompanying subsidy payments to require the development of a local land-use plan for the lands affected to ensure that railway relocation assists in the general improvement of the urban core.

MAGNITUDE:

Railway transport expenditures:	1984-85 est.	1983-84 est.
Operating and capital expenditures	$ 16,411,000	$ 15,272,000
Grants and contributions	$475,908,000	$453,900,000
TOTAL	$492,319,000	$469,172,000

Payments to railways for losses incurred in the transportation of grain: approximately $650,000,000 annually (i.e. Crow Benefit).

Related Agency that Reports Through the Minister of Transport

Canadian Transport Commission

TR.13. Atlantic Region Freight Assistance

DESCRIPTION:

The Traffic and Tariffs Branch of the Canadian Transport Commission (CTC) administers the Atlantic Region Freight Assistance Program authorized by the Maritime Freight Rates Act and the Atlantic Region Freight Assistance Act.

The Maritime Freight Rates Act was passed by Parliament in 1927 to afford Maritime merchants, traders and manufacturers a larger share of the Canadian market instead of just that of the Maritimes. It prescribed certain reductions in freight rates on railway traffic westbound from the Atlantic Provinces and that portion of Quebec east of Diamond and Lévis, situated south of the St-Lawrence River, and authorized similar reductions in rail rates on movements originating and terminating within this select territory. In return for such concessions, the federal government reimburses the railways to the extent of the revenue loss suffered as a result of the reduced rates ordered by Parliament.

In 1969, the Atlantic Region Freight Assistance Act was passed to provide federal assistance in the form of payments to rail, motor vehicle, air and water carriers handling designated commodities in the Atlantic Region. This lessened their transportation costs on movements of traffic within and from the select territory. Other shippers are thus able to compete with rail carriers for the movement of goods subsidized under the Maritime Freight Rates Act. Carriers concerned may only claim the subsidy when they have reduced the rate otherwise applicable, by the percentage prescribed in the regulations.

POTENTIAL LAND IMPACTS:

The Atlantic Region Freight Assistance Program helps sustain the viability of the Maritime economy by expanding the access to potential markets. It allows industry in Atlantic Canada, including renewable resource industries, to attempt to sell goods competitively in central Canada. It thus helps sustain such industries with consequent effects on renewable resource land uses and on communities dependent upon industries producing the designated commodities in Atlantic Canada. The nature of the land-use impacts depends on three factors:

(1) the range of commodities and land uses supported by the subsidy.

(2) the size of transport subsidy necessary to make the industry in Atlantic Canada competitive with elsewhere.

(3) the extent to which the transport subsidy favours selected regions or urban areas at the expense of Atlantic Canada as a whole.

FPLU IMPLICATIONS:

The policy statements and guidelines of the Federal Policy on Land Use should be considered for incorporation into the overall, periodic review process of the Atlantic Region Freight Assistance Program, so far as possible.

MAGNITUDE:

Payments to railway companies under the Maritime Freight Rates Act:	$12,200,000 (1984-85 est.) $14,000,000 (1983-84 est.)
Payments to Railway, Marine and Trucking Companies under the Atlantic Region Freight Assistance Act:	$45,500,000 (1984-85 est.) $48,700,000 (1983-84 est.)

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APPENDICES

A. Federal Programs With General Pervasive Land Resource Impacts

B. Crown Corporations That Can Significantly Affect the Land Resource

C. Other Federal Programs With Some Potential To Affect the Land Resource

D. List of Contacts

E. List of Reviewers

APPENDIX A

Federal Programs With General Pervasive Land-Resource Impacts

Key federal programs which have a pervasive influence on the economy, housing, migration, settlement patterns or community development and hence, indirectly on land use are noted below. In general, the effects of these programs on land use are very indirect. As a consequence, it would not be possible to take the guidelines of the Federal Policy on Land Use into account while implementing these programs.

Department and Program

Employment and Immigration

Unemployment Insurance Benefits -- General

Finance

Federal-Provincial Arrangements: Fiscal Equalization Payments

Bank of Canada: Monetary and Interest Rate Policies

Health and Welfare

Canada Assistance Plan

Ministry of State for Science and Technology

Technology Policy for Canada

Science Council of Canada

APPENDIX B

Selected Crown Corporations That Can Significantly Affect the Land Resource

Energy Sector

Eldorado Nuclear Limited

Petro Canada: Resources Sector

Transport Sector

Canadian National Railways

Via Rail

APPENDIX C

Other Federal Programs With Some Potential To Affect the Land Resource

Although the potential land-use effects of these programs are considered to be less significant than those of the programs described in the main body of the report, managers of the programs listed below would also benefit from reviewing and giving consideration to the Guidelines of the Federal Policy on Land Use.

Department, Branch and Program

Agriculture Canada

Marketing and Economics Branch

- Advance Payments for Crops
- Agricultural Products Marketing Act
- Agricultural Cooperatives Marketing Act
- Canadian Market Development Fund
- Fruit and Vegetable Storage Construction Assistance Program

Regional Development Branch

- Development Policy

Food Production and Inspection Branch: Plant Products

- Fertilizer Evaluation and Registration
- Pesticide Evaluation and Registration
- Seed: Licensing of Superior Crop Varieties

Canadian Forestry Service

- Research into Forest Insects and Diseases

National Farm Products Marketing Council

Canada Mortgage and Housing Corporation

Mortgage Loan Insurance for Residential Mortgages

Programs Legislated but not Currently Funded: New Communities Program, Land Assembly Program, Municipal Infrastructure Program

Employment and Immigration

Canada Manpower Mobility Program

Employment Development Programs: Community Development Projects, Community Service Projects, Local Employment Development Assistance, Local Employment Assistance, Outreach

Job Creation: Canada Works, Career Access, Job Corps, Local Employment Assistance and Development (LEAD)

Energy, Mines and Resources

Earth Sciences Sector

- Arctic Research: Polar Continental Shelf

Research and Technology Sector

- Canada Centre for Mineral and Energy Technology (CANMET)
- Energy Technology -- Saskatchewan Centre for Heavy Oil Technology (Federal-Provincial Agreement)

Energy Program Sector

Energy Program: Energy Conservation

- Energy From Forest Biomass Conversion
- Municipal Energy Management Program

Related Agency

- Electric Power Generation: Lower Churchill Development Corporation

Environment Canada

Atmospheric Environment Service

- Atmospheric and Meteorological Research: Agro-Forest Meteorology
- Canadian Climate Centre: Climate Applications
- Weather Services: Advice to Weather Sensitive Industries

Conservation and Protection Service

- Baseline Studies: Arctic
- Environmental Emergencies: Oil Spills
- Commercial Chemicals
- Socio-Economic Impact Analyses

Fisheries and Oceans

- Small Craft Harbours Program

Indian and Northern Affairs

Indian and Inuit Affairs Program

- Community Infrastructure and Services

Northern Canada Power Commission

National Capital Commission

Regional and Industrial Expansion

Industrial and Regional Development Program

- Community Based Industrial Development Program
- Small Business Loans

Trade Program: International Trade Development

- Food Promotion: Trade Promotion of Food Products Abroad
- Cooperative Overseas Marketing Program: Forest Products, BC
- Analysis of International Trade Environment and Policy Formulation

Federal Business Development Bank

Foreign Investment Review Agency

Public Works Canada

- Transportation and Other Engineering Programs: The Northwest Highway System
- Canada Lands Co. (Le Vieux-Port-de-Québec) Ltd.
- Habourfront Corporation (Toronto)

Transport Canada

Urban Transportation

- Railway Relocation and Grade Separations
- Policy, Research and Demonstration re: Urban Transportation

Air Transportation

- Regulation of Commercial Air Services and Subsidies

APPENDIX D

List of Contacts

Donald Bedier
Transport Canada
Ottawa, Ontario

Re: Subsidiary agreements on transportation under the ERDAs

John Birg
Indian and Northern Affairs Canada
Ottawa, Ontario

Re: Economic development agreements with Yukon and Northwest territories

Ted Buch
Regional Mineral Development Division
Energy, Mines and Resources
Ottawa, Ontario

Re: Federal-provincial mineral development subsidiary agreements under ERDAs

Tony Bull
Development Branch
Canadian Forestry Service
Agriculture Canada
Ottawa, Ontario

Re: Federal-provincial Forestry subsidiary agreements under ERDAs

Réjean Casaubon
Assistant Manager
Petroleum Compensation Programs
Energy Program Sector
Energy, Mines and Resources Canada
Ottawa, Ontario

Re: Oil Pricing and Petroleum Compensation Programs

Charles Charron
Livestock Feed Board of Canada
Montreal, Quebec

Nick Coomber
Parks Canada
Environment Canada
Ottawa, Ontario

Re: Cooperative Heritage Areas; Canadian Heritage Rivers System

Tom Foote
Waste Management Branch
Environmental Protection Service
Environment Canada
Hull, Quebec

Réjean F. Gervais
Department of Regional Industrial Expansion
Ottawa, Ontario

Re: Federal-provincial tourism development agreements

Michael Greco
Parks Canada
Environment Canada
Ottawa, Ontario

Re: National Parks; Heritage Rivers; Heritage Areas

Lyndon Johnson
Prairie Farm Rehabilitation Administration
Agriculture Canada

André Lafond
Department of Regional Industrial Expansion

Re: ERDAs: Subsidiary agreements

J.G.I. Lark
Freshwater Habitat Division
Fish Habitat Management Branch
Fisheries Operations Directorate
Pacific and Freshwater Fisheres
Fisheries and Oceans Canada
Ottawa, Ontario

Re: Freshwater Habitat

Maurice Lockman
ENFOR Program
Canadian Forestry Service
Agriculture Canada
Ottawa, Ontario

Re: Energy from the Forest (ENFOR) Program

A. Duff Mitchell
Department of Regional Industrial Expansion
Ottawa, Ontario

Re: WTIDP, POS Pilot Plant Project

E.F Muller
Priority Issues Directorate
Environmental Protection Service
Environment Canada
Ottawa, Ontario

Richard Paquette
Department of Regional Industrial
Expansion
Ottawa, Ontario

Re: Federal-provincial subsidiary agreements
under ERDAs administered by DRIE

Christopher Phillips
Transport Canada
Ottawa, Ontario

Re: Crow Reform: The Western Grain
Transportation Act

Valerie Pryce
Indian and Northern Affairs
Hull, Quebec

Re: Economic Development Agreements
with Territories

Mahlon Robinson
Parks Canada
Environment Canada
Ottawa, Ontario

Re: National Historic Parks and Sites;
Heritage Canals

Wayne Roddick
Canadian Wildlife Service
Environment Canada
Ottawa, Ontario

Re: Wildlife Habitat Program

André Rousseau
Regional Development Branch
Agriculture Canada
Ottawa, Ontario

Re: Agricultural subsidiary agreements
under ERDAs

Barbara Schultz
Energy Program Sector
Energy, Mines and Resources Canada
Ottawa, Ontario

Re: Petroleum Incentives Program

APPENDIX E

List of Reviewers

AGRICULTURE -- J.L. Nowland.
-- Allan N. Auclair -- Canadian Forestry Service.
-- Gilles Choquette -- Canadian Dairy Comission.
-- Terry Kremeniuk-- Farm Credit Corporation.
-- Denis Éthier -- Livestock Feed Board of Canada.
-- Ralph J. Barrie -- National Farm Products Marketing Council (deleted).

CANADIAN MORTGAGE HOUSING CORPORATION -- Peter Spurr, Research Division.

CANADIAN WHEAT BOARD -- Graham Walker, Weather and Crop Surveillance.
-- B.T. Oleson, Planning.

EMPLOYMENT AND IMMIGRATION -- Keith Langille, Energy, Construction and Agriculture.

ENERGY, MINES AND RESOURCES -- Trevor Swerdfager, J.D. McTaggart-Cowan, Office of Environmental Affairs.
-- J. Howieson, Uranium and Nuclear Energy Branch.
-- J.W. Beare, W.D. Smythe -- Atomic Energy Control Board.
-- D.R. Cowper -- Atomic Energy of Canada Ltd..
-- Ken Vollman and G. Yorke Slader -- National Energy Board.

ENVIRONMENT CANADA -- B. Calvert, Corporate Planning Group.
-- F.S. Abbott -- Conservation and Protection.
-- D.I. Gillespie -- Canadian Wildlife Service.
-- R. Farrel, R.L. Pentland -- Inland Waters Directorate.
-- H.K. Eidsvik -- Parks Canada.
-- David J. Neave -- Wildlife Habitat Canada (deleted).

EXTERNAL AFFAIRS -- A.L. Hamilton -- International Joint Commission.

FINANCE -- Jerry Beausoleil, Energy and Resource Policy Division.
-- S. McLean.

FISHERIES AND OCEANS -- C.L. Dominy, Fish Habitat Management Branch.

INDIAN AND NORTHERN AFFAIRS -- Penny Shafto, Policy Co-ordination Directorate.
-- G.E. Bangay, Northern Land Use Planning.

NATIONAL DEFENCE -- Joe Crowe, Properties and Utilities.

NORTHERN PIPELINE AGENCY -- B.E. Macdonald, Public Relations.

PUBLIC WORKS -- Alan Jowett, Property Development.

REGIONAL INDUSTRIAL EXPANSION -- Baj Hafez, John Banigan, Program Development and Operations.
-- Marcel Noël, K. Knechtel -- Tourism Canada.
-- Jim Milne -- Cape Breton Development Corporation.

SOLICITOR GENERAL -- Rheal J. LeBlanc, T.K. Crawford -- Correctional Service Canada.

TRANSPORT CANADA -- Pierre Rénart, Departmental Policy.
-- D.B. Wurtele, Industry Relations.
-- R.W. Stephenson, Planning and Co-ordination.
-- A.D. McKenzie (# TR.6), A.E. Polotylo (# TR.7), J.K. Morrison (# TR.7).
-- Jean-Michel Tessier -- Ports Canada.
-- Bob Good -- St. Lawrence Seaway Authority.

TREASURY BOARD -- J.B. McCanse, Pierre Boivin.

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These papers are available free of charge from:
Land-Use Policy and Research Branch, Lands Directorate, Environment Canada,
20th Floor, Place Vincent Masssey, Ottawa, Ontario, Canada K1A 0E7 (819) 997-2100.

* Aussi disponible en français.